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Lim et al.

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(54) **SPINAL CONSTRUCT AND METHOD**

(71) Applicant: **Warsaw Orthopedic, Inc.**, Warsaw, IN (US)

(72) Inventors: **Roy K. Lim**, Germantown, TN (US); **Matthew M. Morrison**, Cordova, TN (US); **William R. Sears**, Warrawee Sydney (AU)

(73) Assignee: **Warsaw Orthopedic, Inc.**, Warsaw, IN (US)

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(51) **Int. Cl.**

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A61F 2/46	(2006.01)
A61B 17/02	(2006.01)
A61F 2/30	(2006.01)

(52) **U.S. Cl.**

CPC ***A61F 2/4611*** (2013.01); ***A61F 2/44*** (2013.01); *A61B 2017/0256* (2013.01); *A61F 2002/3038* (2013.01); *A61F 2002/30133* (2013.01); *A61F 2002/30507* (2013.01); *A61F 2002/30604* (2013.01); *A61F 2002/30616* (2013.01)

(58) **Field of Classification Search**

CPC A61F 2/4611; A61F 2/44; A61F 2002/30133; A61F 2002/3038; A61F 2002/30507; A61F 2002/30604; A61F 2002/30616; A61B 2017/0256

USPC 606/246, 279, 90, 105; 623/17.11, 623/17.15, 17.16

See application file for complete search history.

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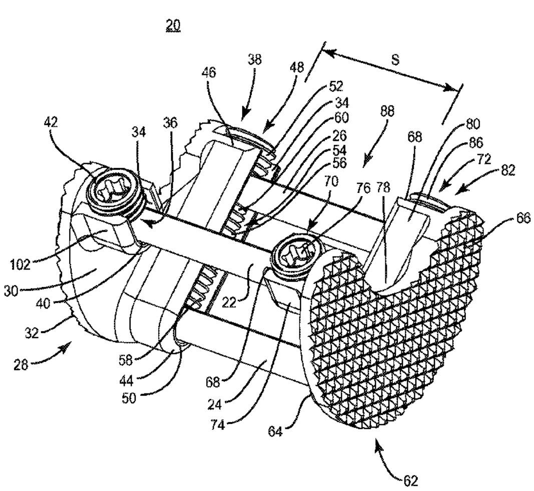
Primary Examiner — Pedro Philogene
Assistant Examiner — David C Comstock

(57) **ABSTRACT**

A spinal construct includes a first member including a surface that defines a first cavity and a second cavity. The first member is configured to engage a first vertebral surface. A second member includes a surface that defines a first cavity and a second cavity. The second member is configured to engage a second vertebral surface. The members are spaced and the first cavities are disposed in substantial alignment such that at least one first rod is disposed in the first cavities and the second cavities are disposed in substantial alignment such that a plurality of second rods are disposed in the second cavities and spaced via at least one spacer disposed between the second rods within at least one of the second cavities. Systems and methods are disclosed.

20 Claims, 20 Drawing Sheets



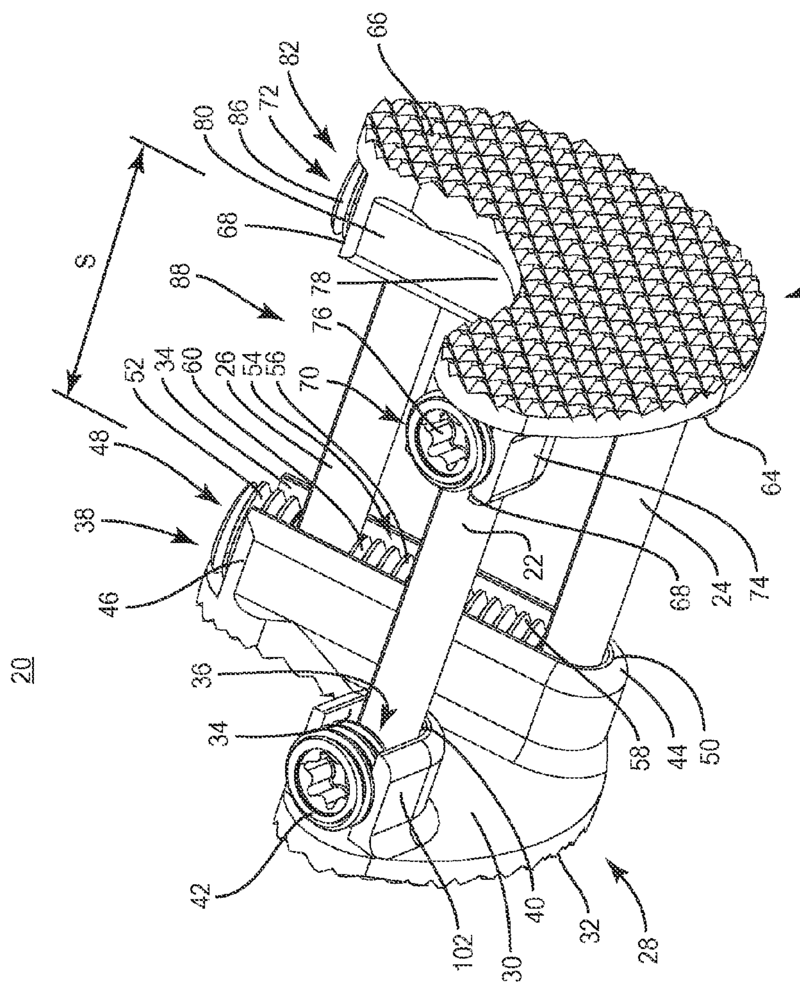


FIG. 1

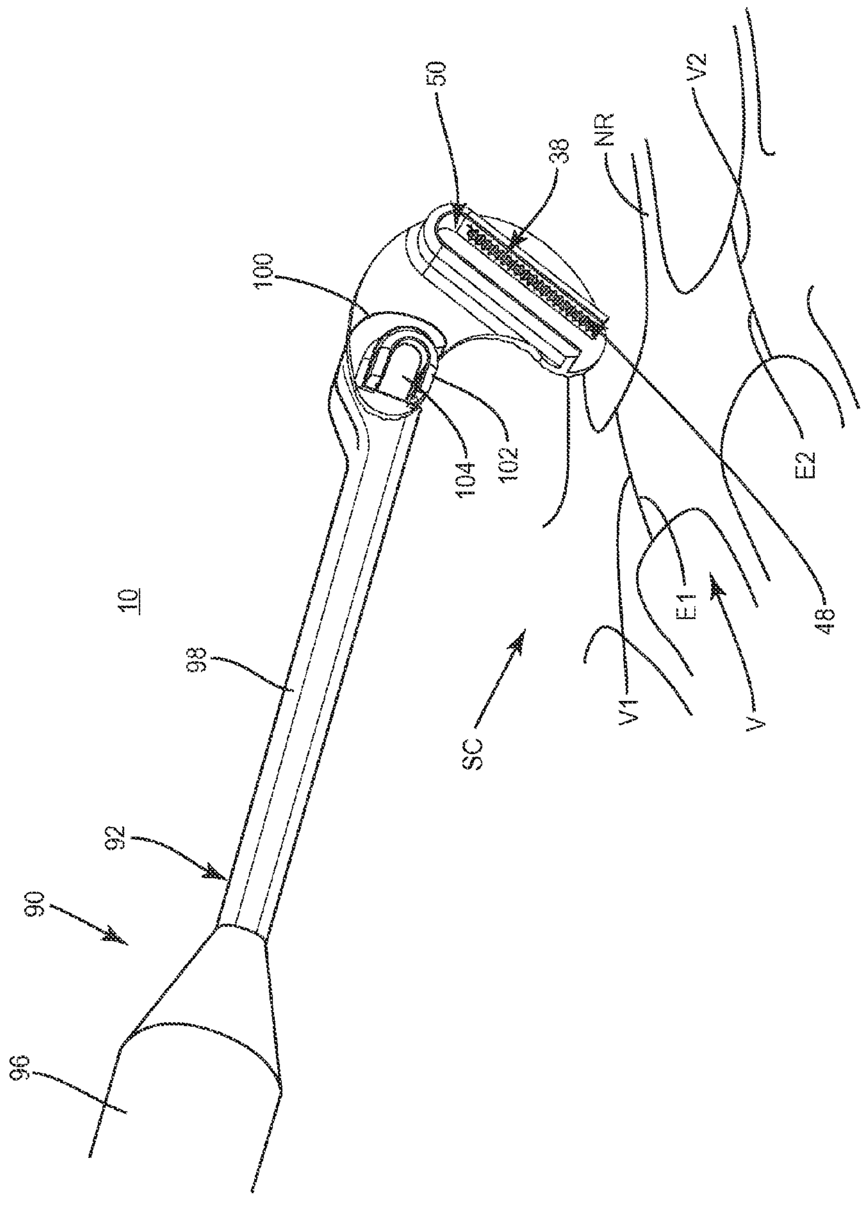


FIG. 2

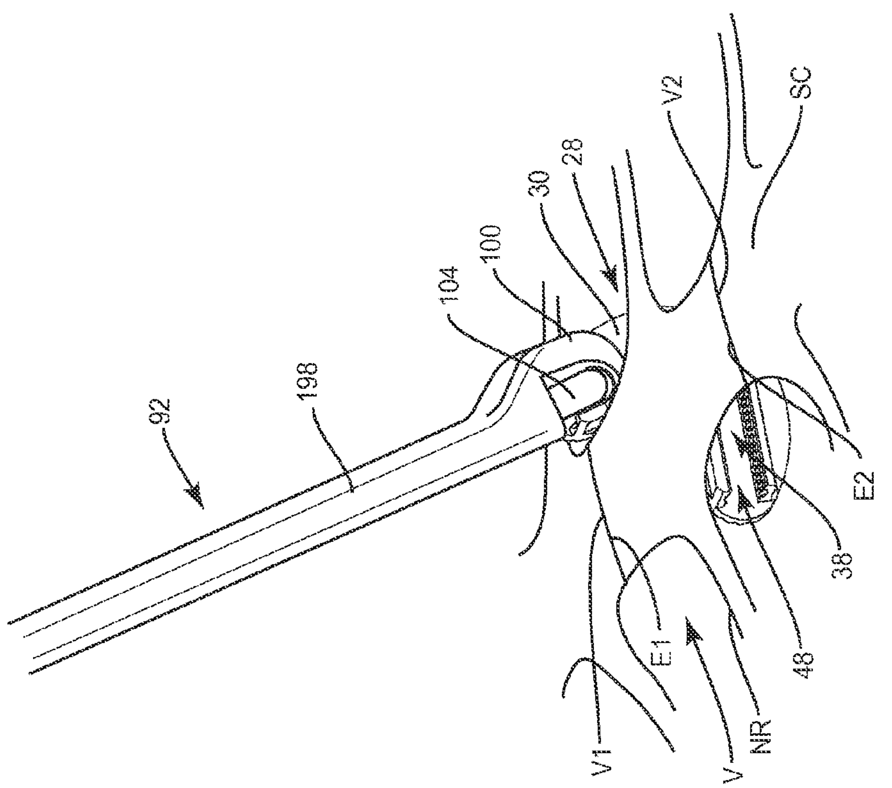


FIG. 3

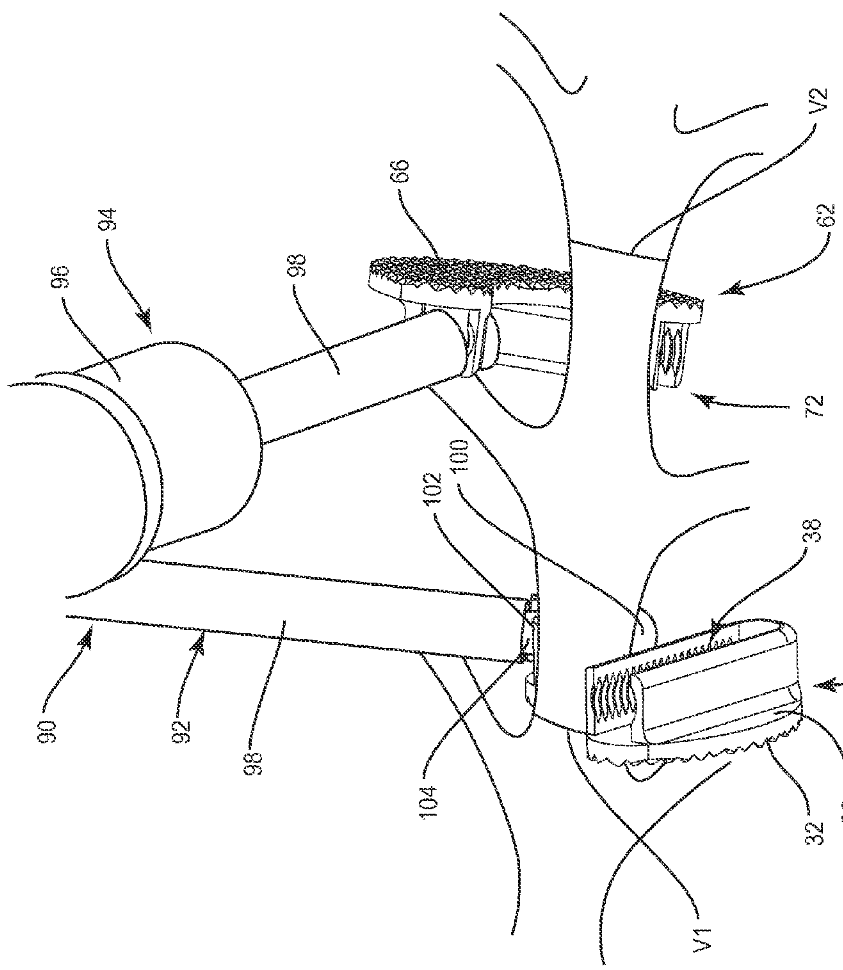


FIG. 4

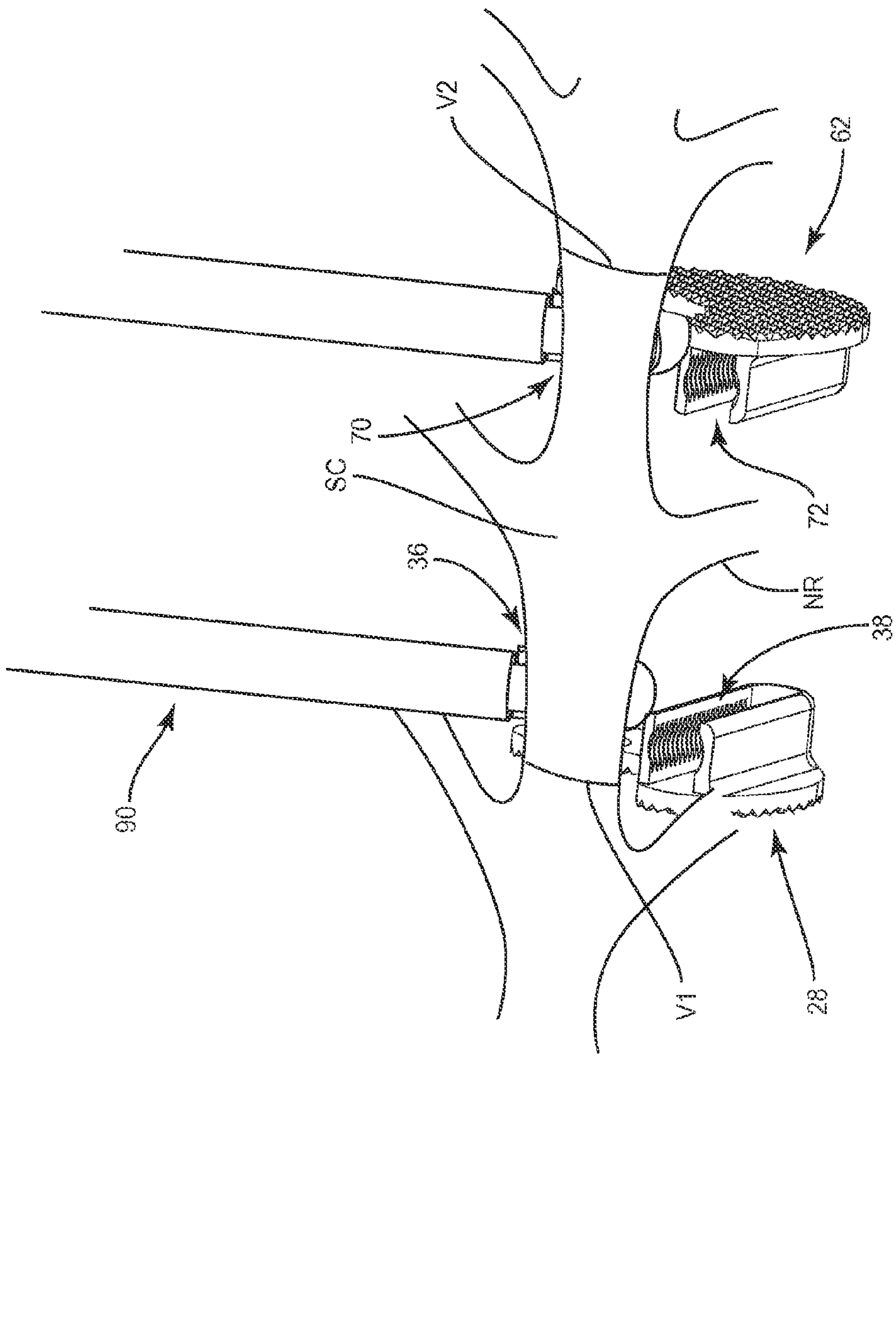


FIG. 5

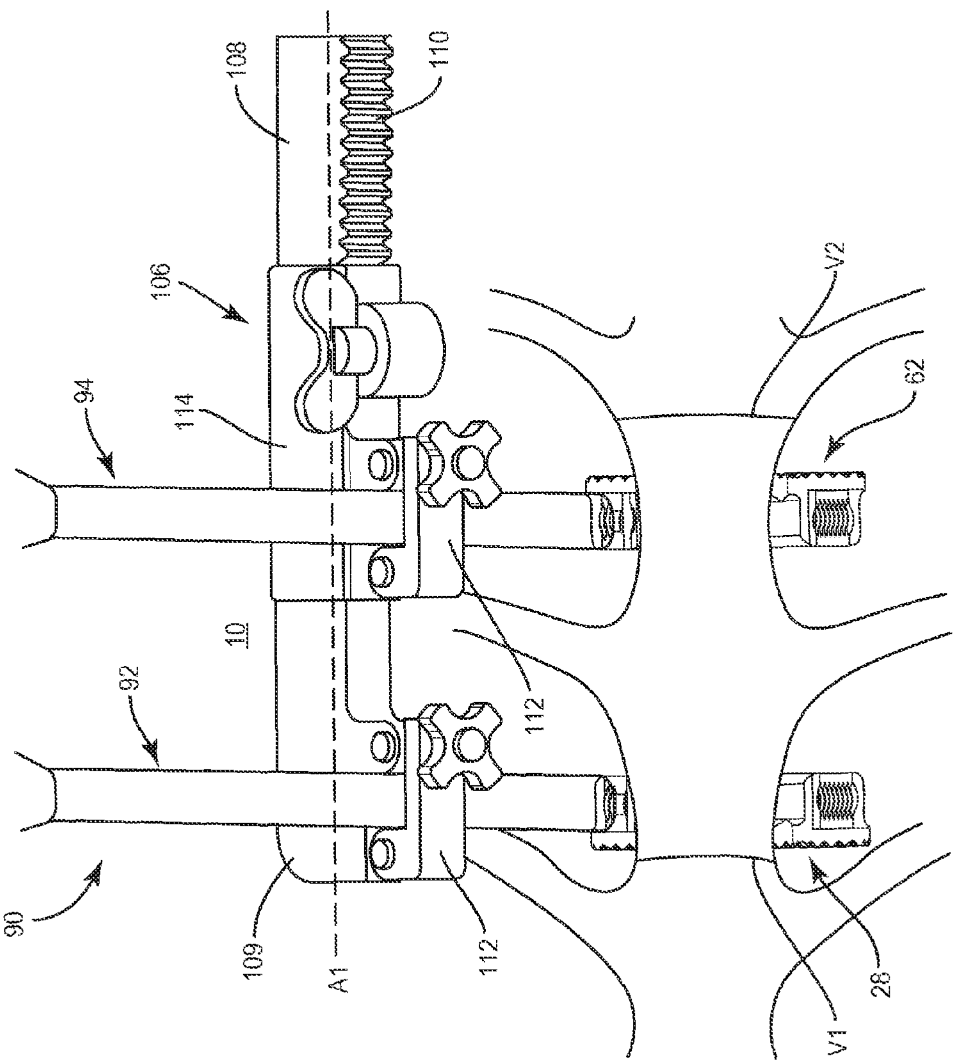


FIG. 6

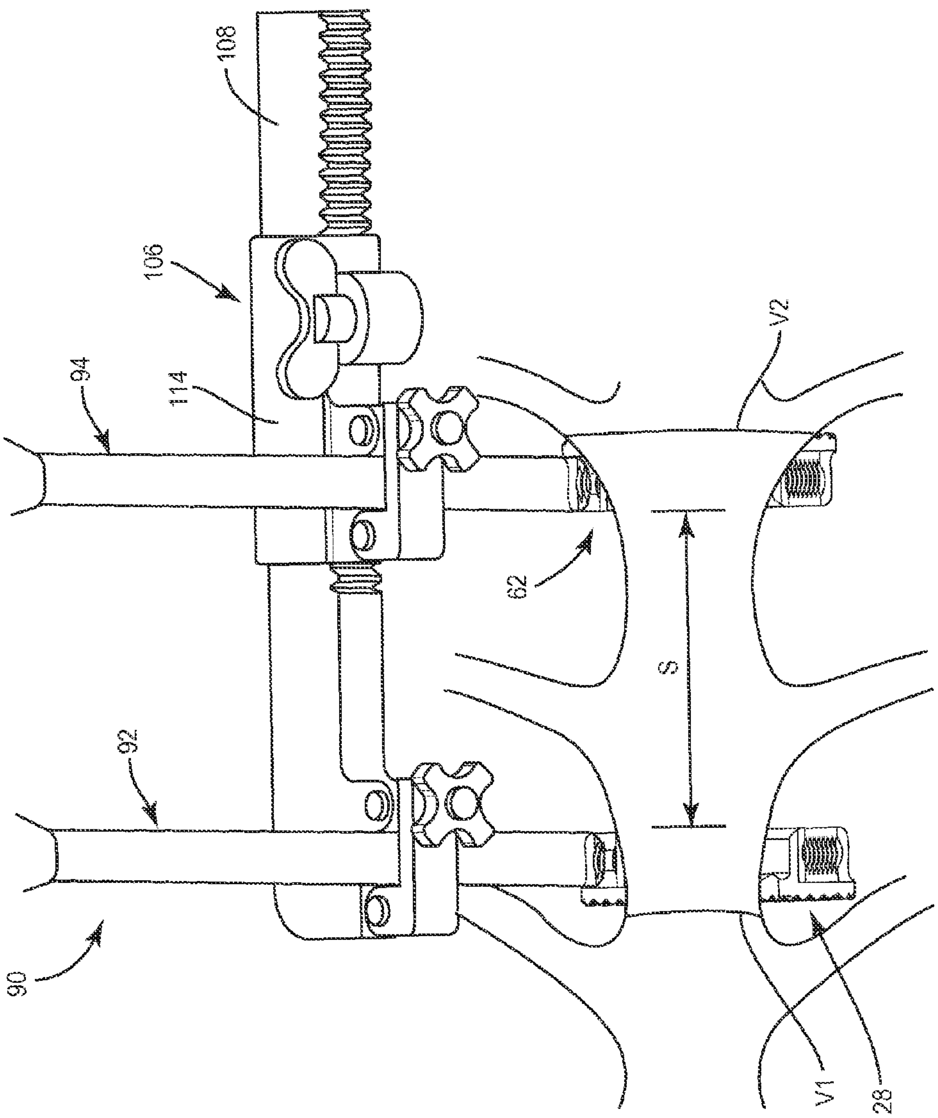


FIG. 7

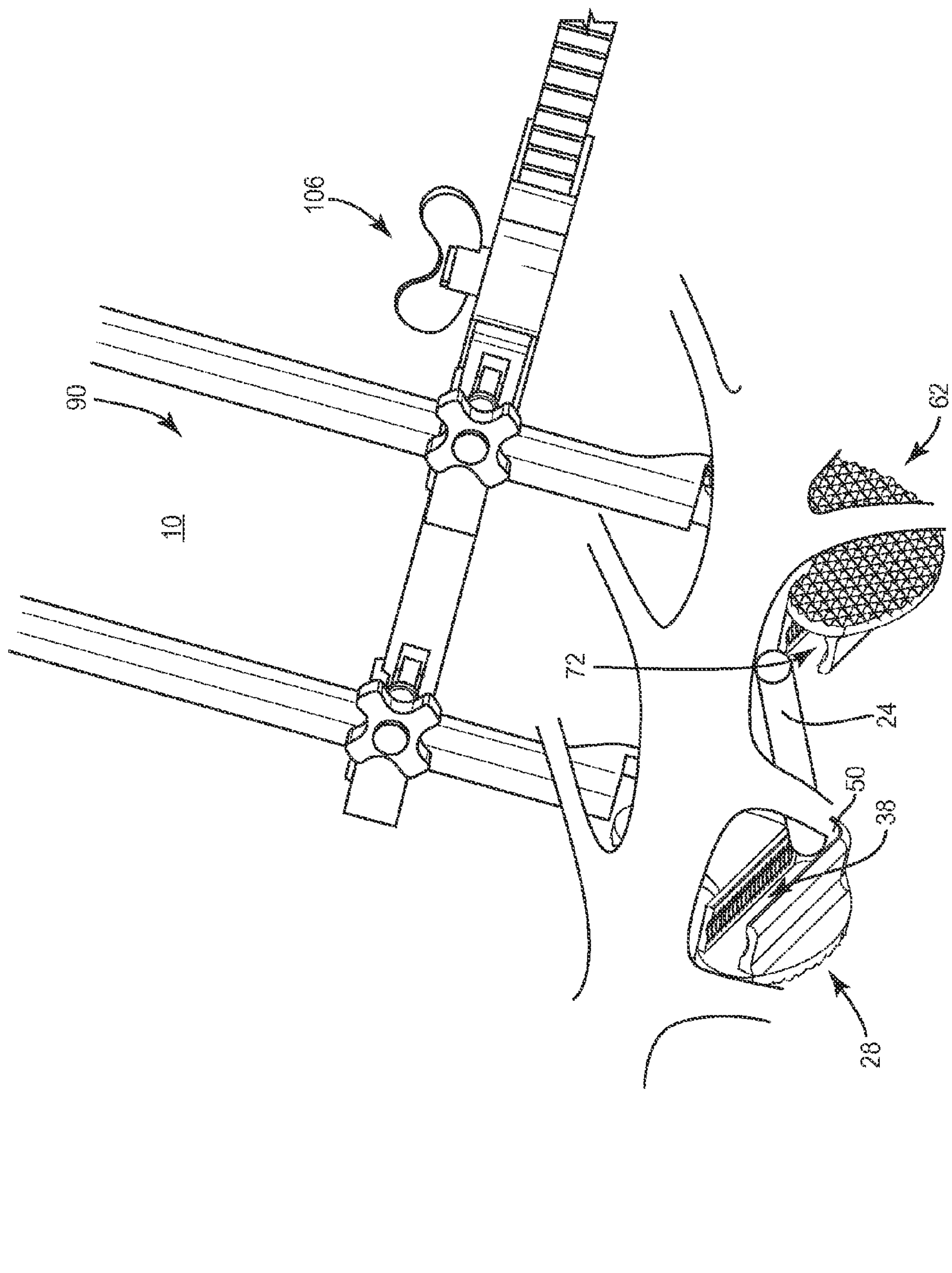
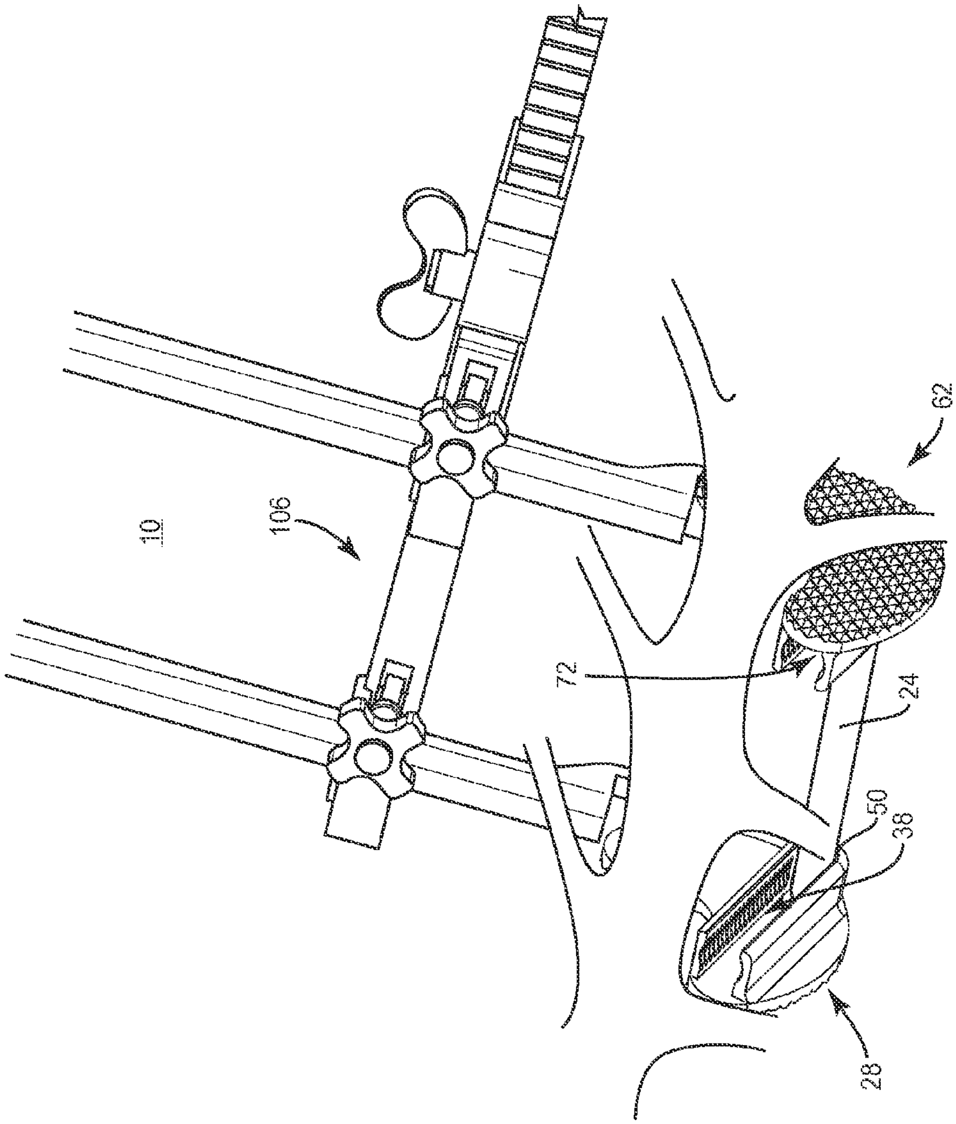


FIG. 8



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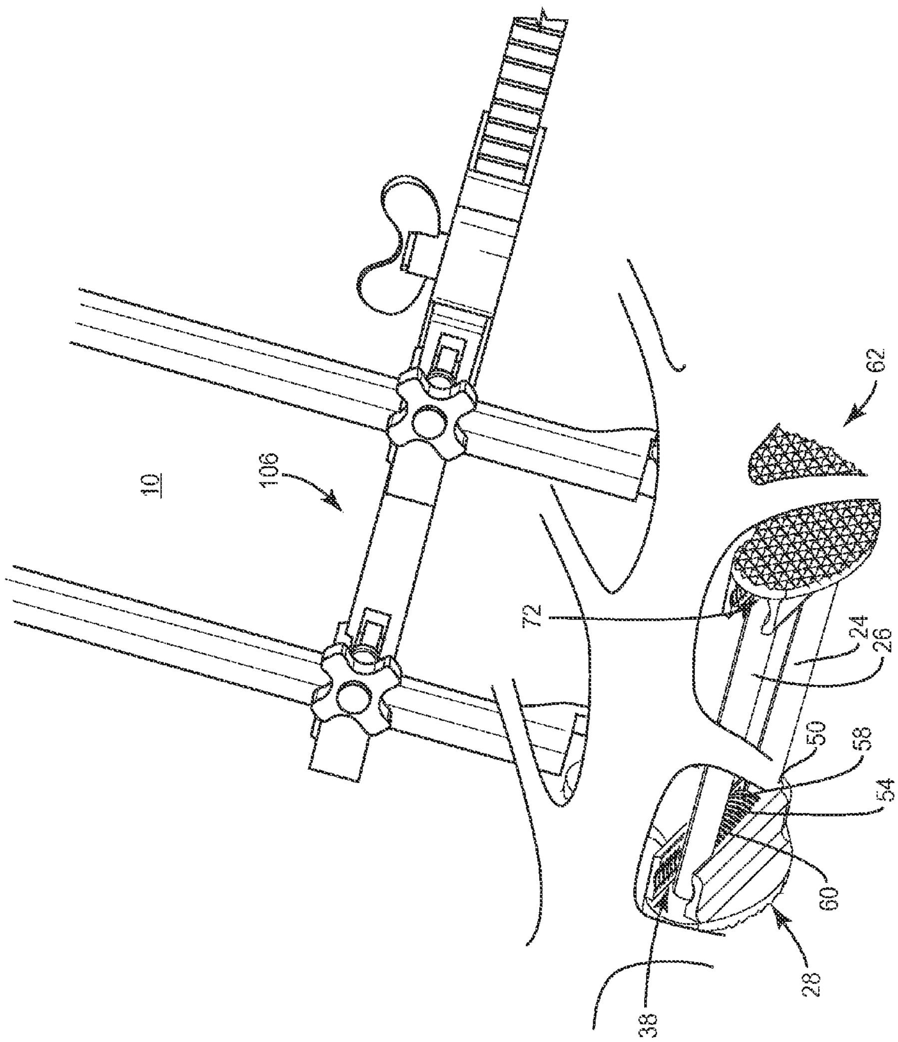

FIG. 10

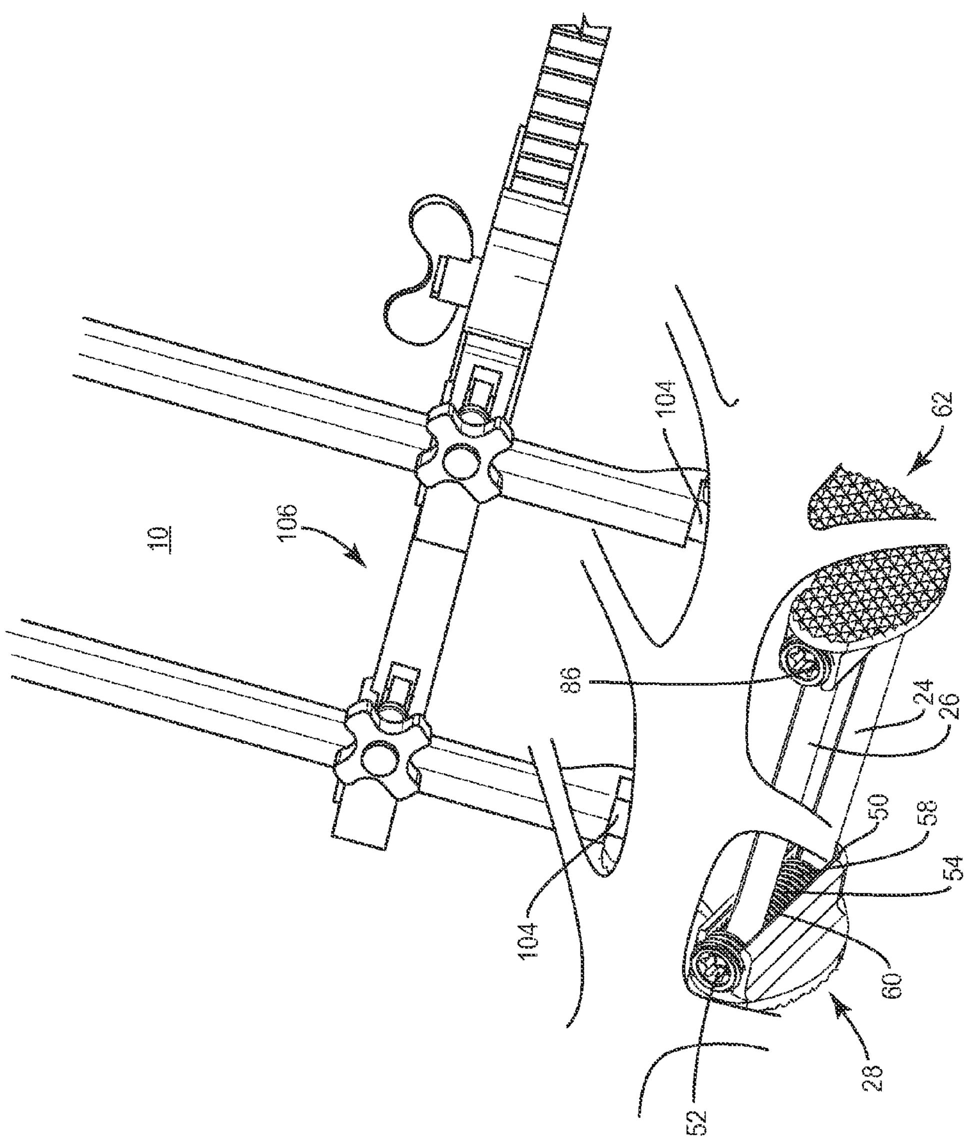

FIG. 11

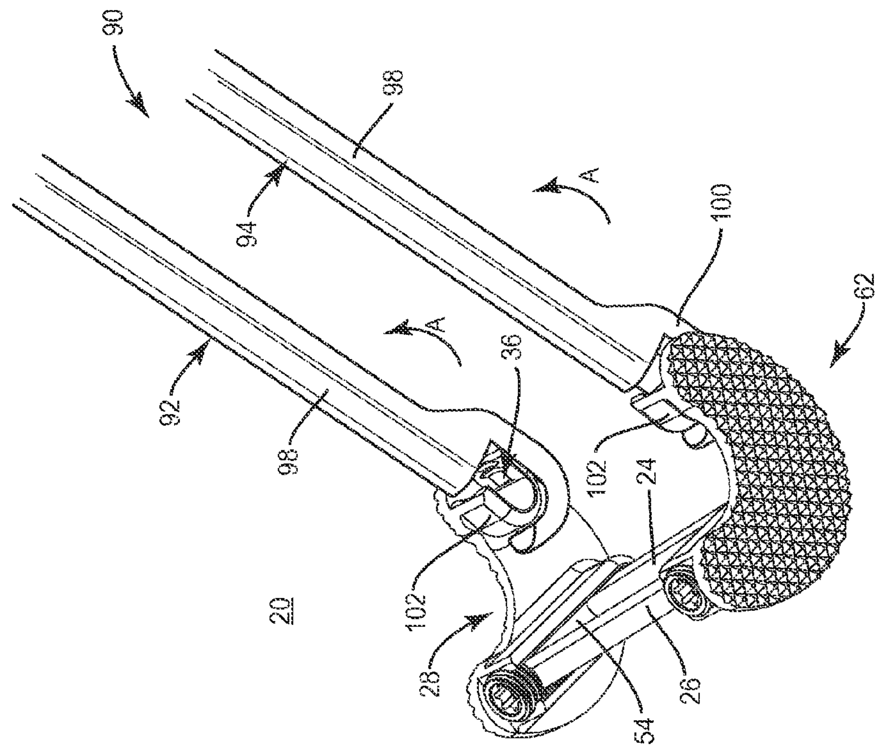

FIG. 12

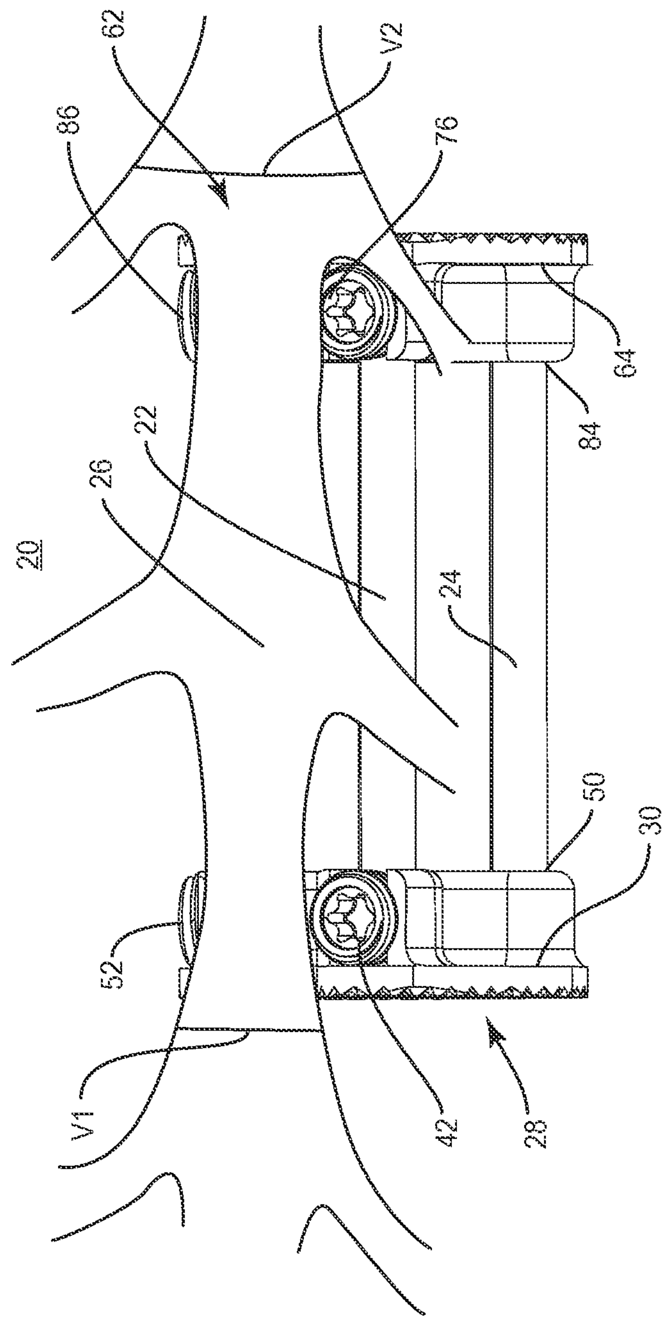

FIG. 13

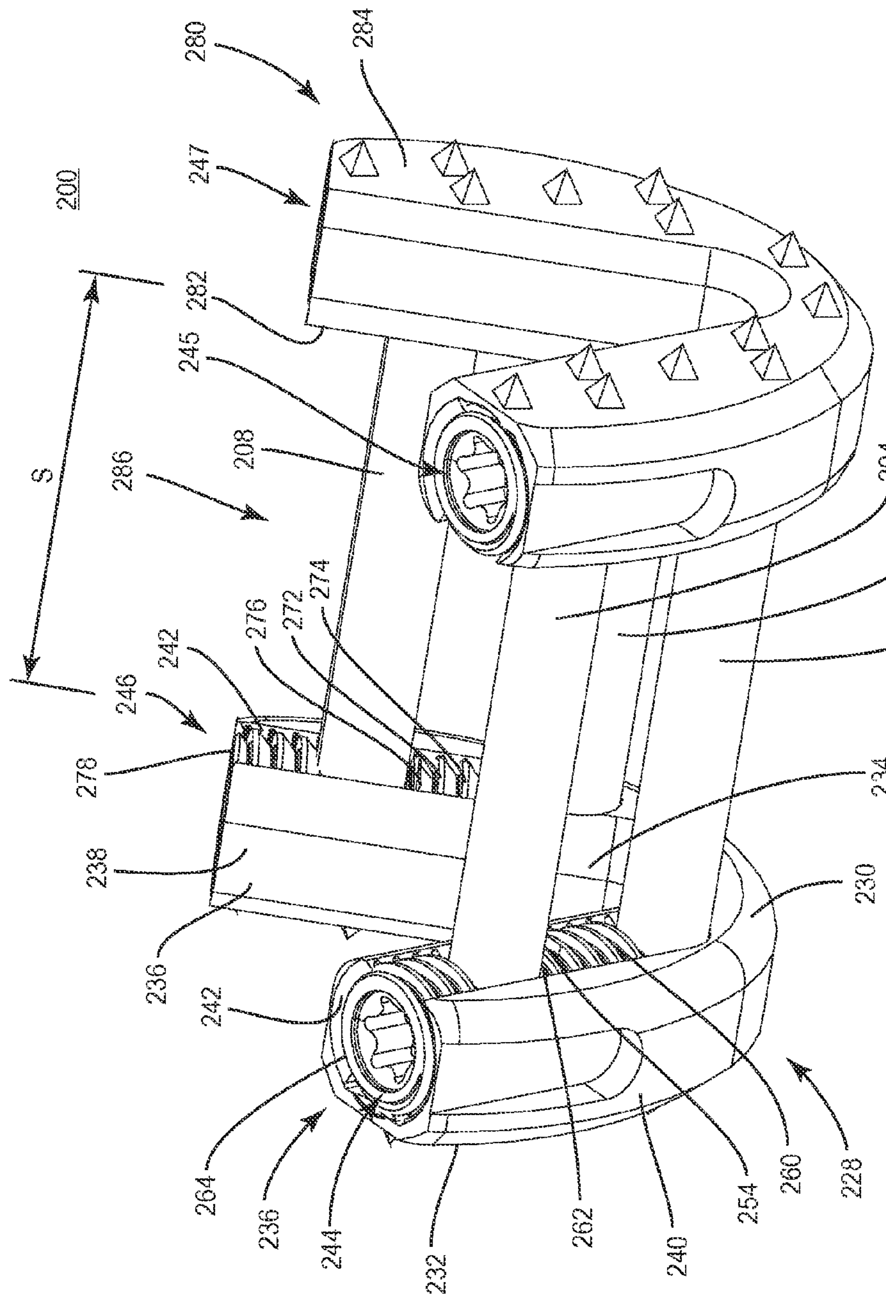

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FIG. 14

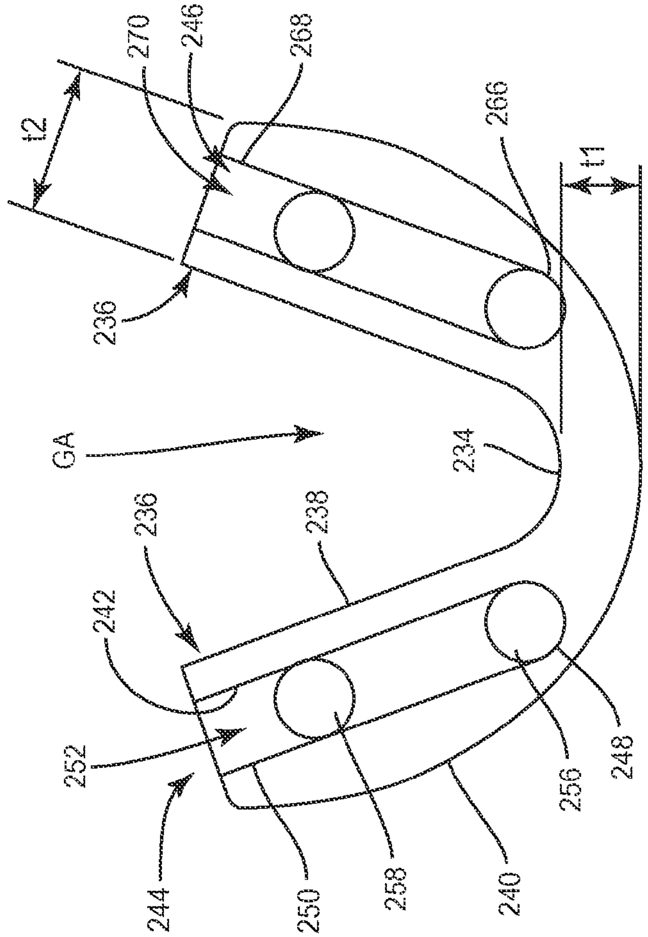
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FIG. 16

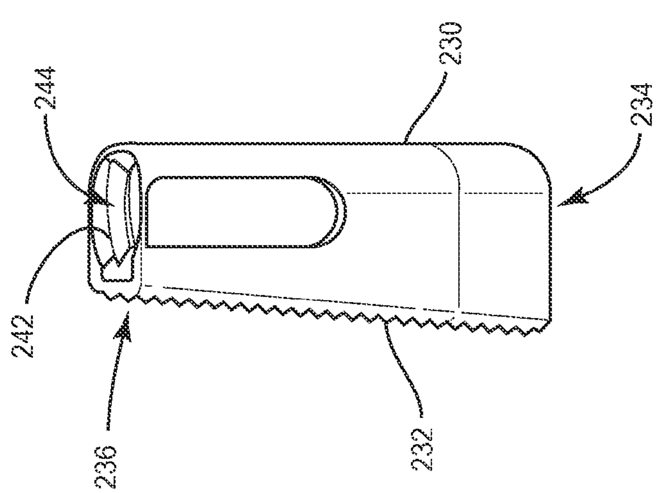
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FIG. 15

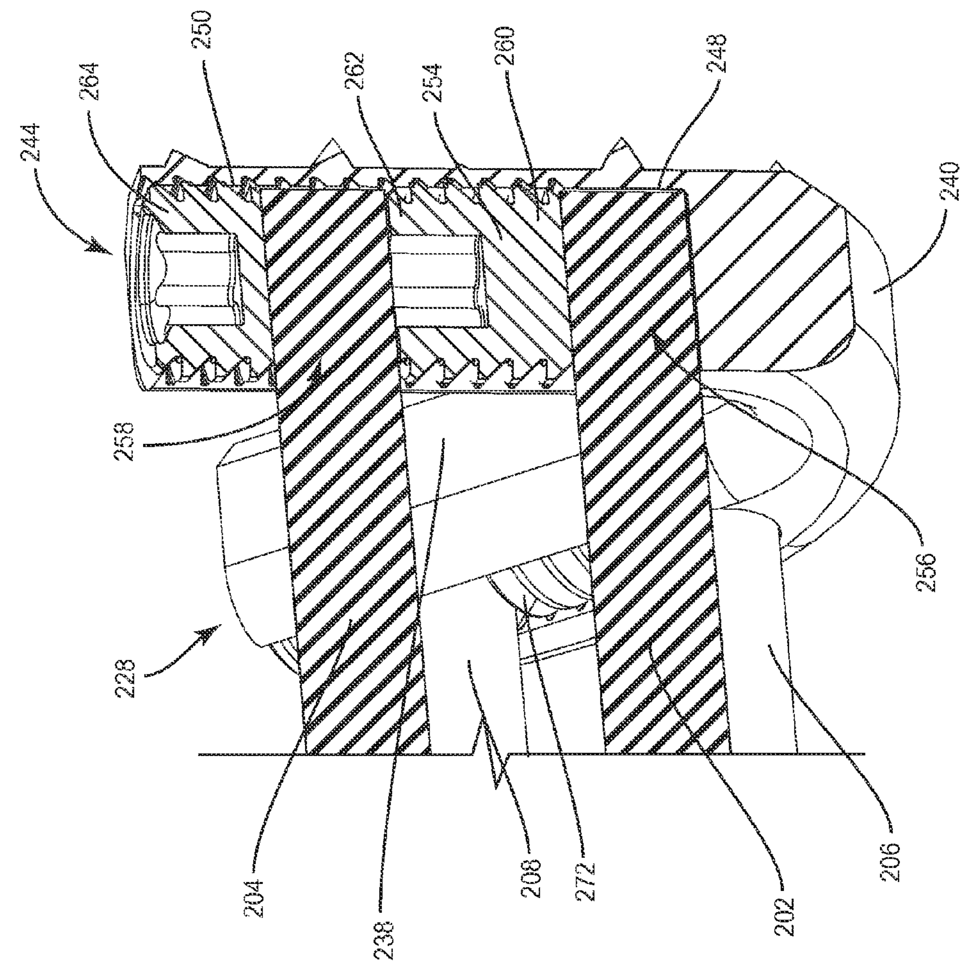
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FIG. 17

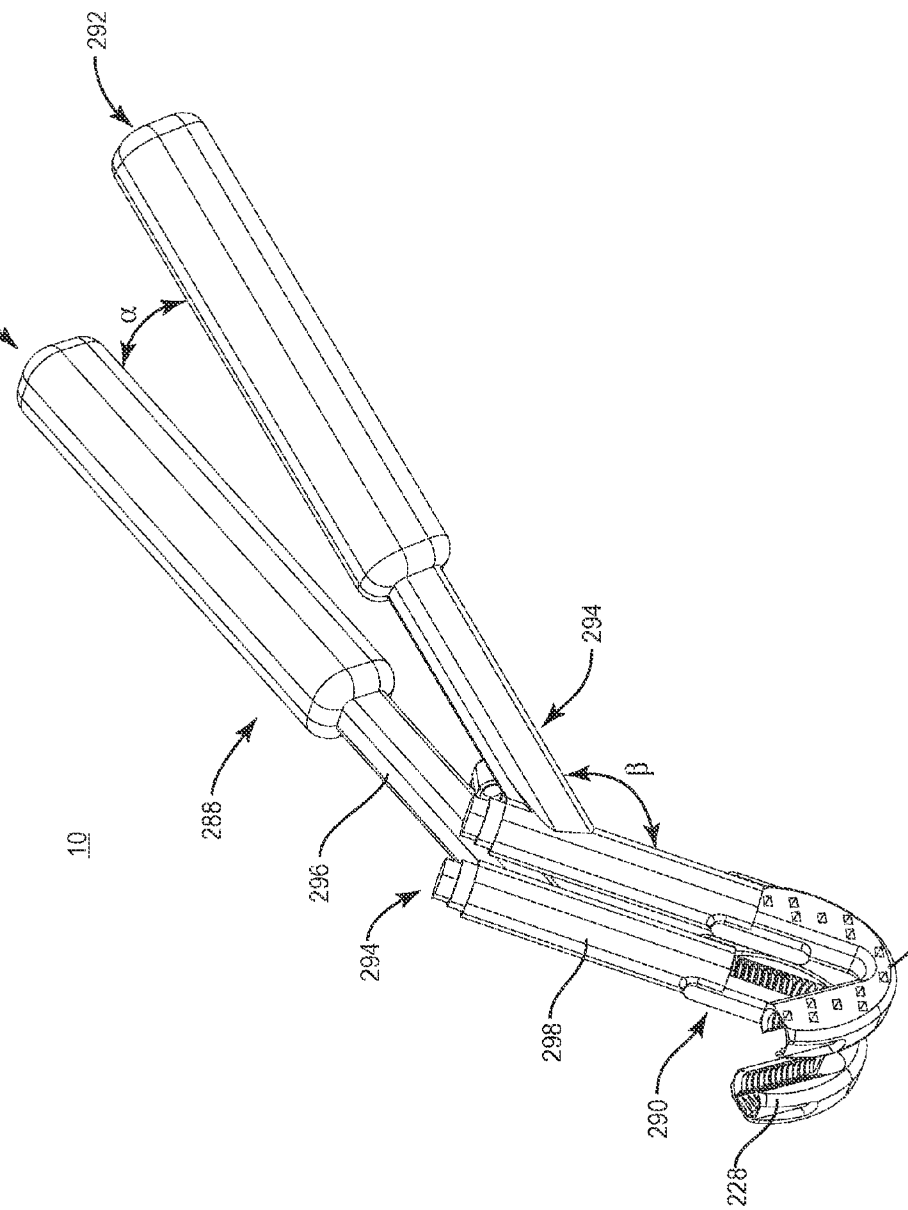

FIG. 18

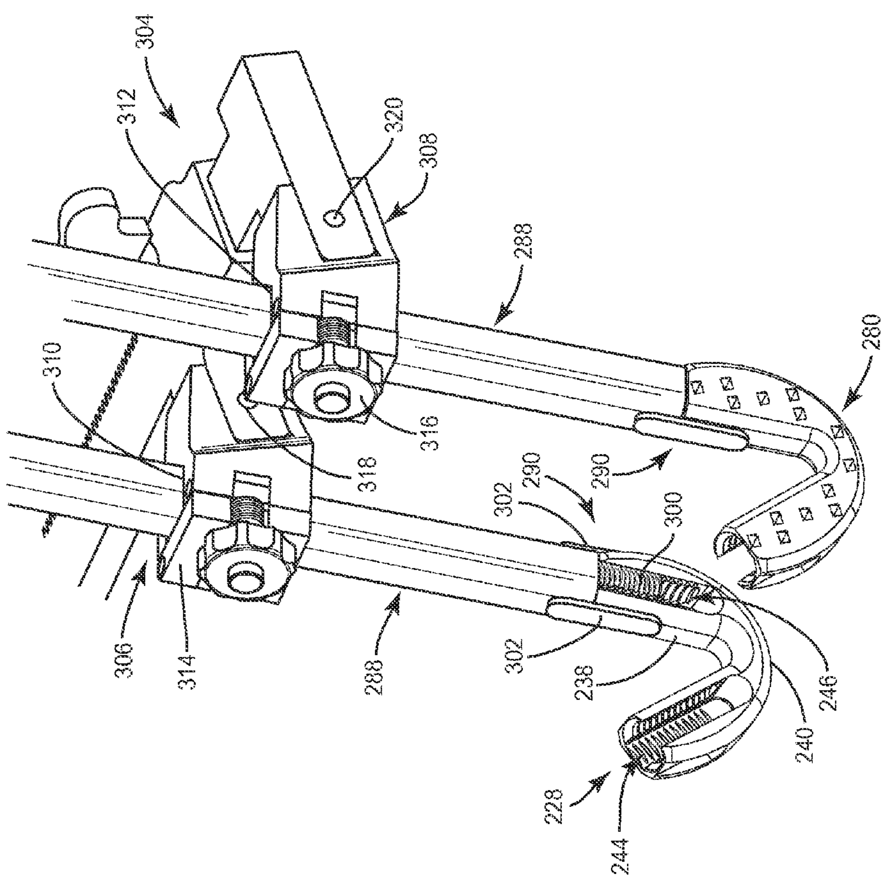
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FIG. 19

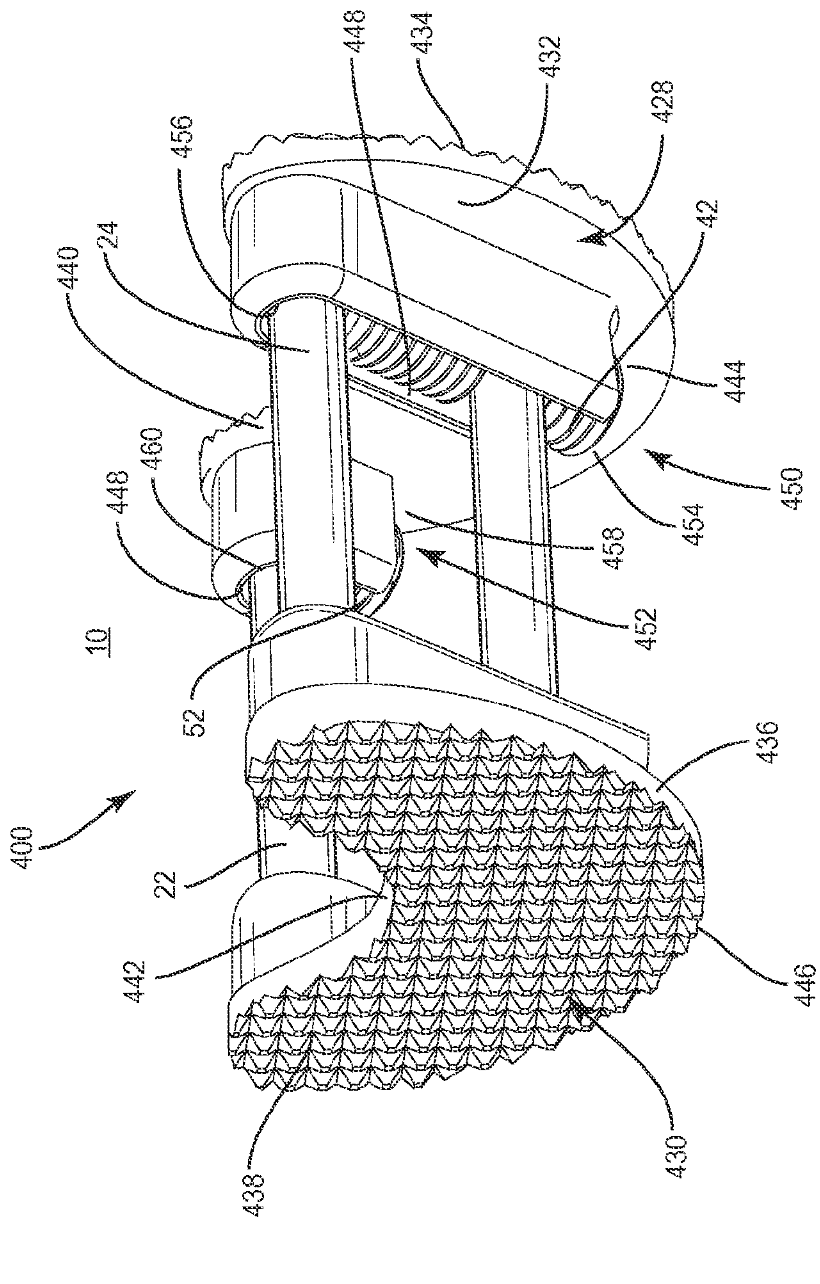
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FIG. 20

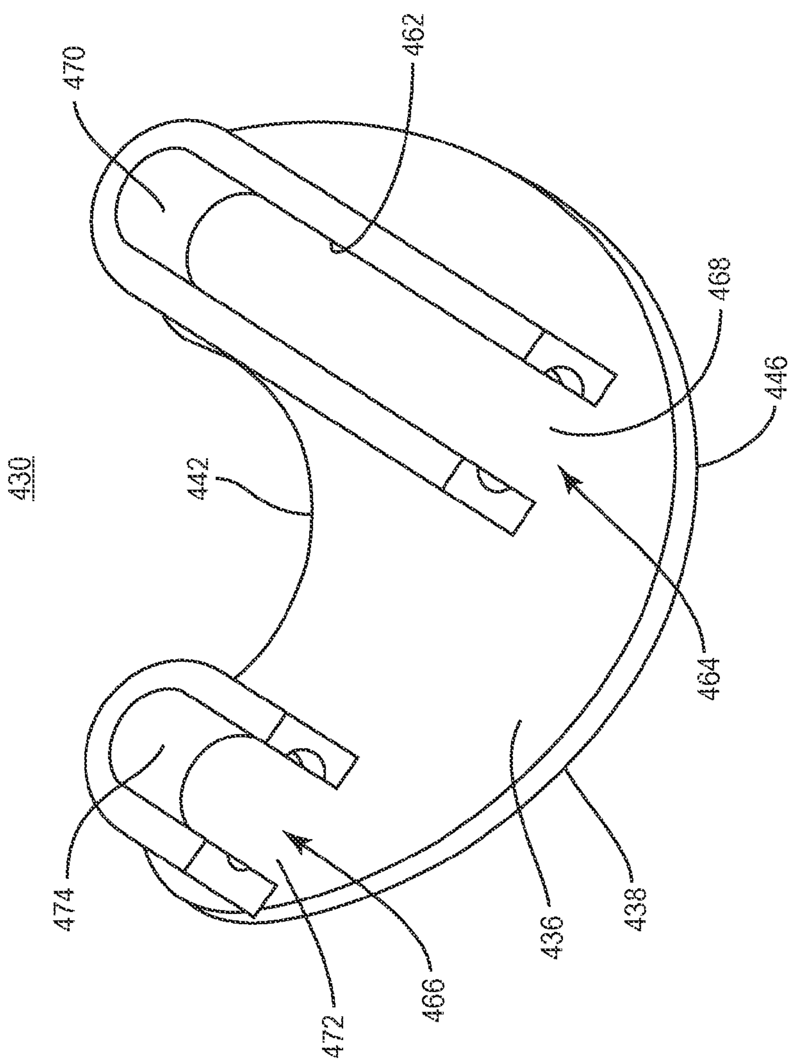

FIG. 21

SPINAL CONSTRUCT AND METHOD

TECHNICAL FIELD

The present disclosure generally relates to medical devices for the treatment of musculoskeletal disorders, and more particularly to a spinal construct configured for disposal between spaced vertebrae and a method for treating a spine.

BACKGROUND

Spinal disorders such as degenerative disc disease, disc herniation, osteoporosis, spondylolisthesis, stenosis, scoliosis and other curvature abnormalities, kyphosis, tumor, and fracture may result from factors including trauma, disease and degenerative conditions caused by injury and aging. Spinal disorders typically result in symptoms including pain, nerve damage, and partial or complete loss of mobility.

Non-surgical treatments, such as medication, rehabilitation and exercise can be effective, however, may fail to relieve the symptoms associated with these disorders. Surgical treatment of these spinal disorders includes fusion, fixation, corpectomy, discectomy, laminectomy and implantable prosthetics. In procedures, such as, for example, corpectomy and discectomy, fusion and fixation treatments may be performed that employ implants to restore the mechanical support function of vertebrae. This disclosure describes an improvement over these prior art technologies.

SUMMARY

In one embodiment, a spinal construct is provided. The spinal construct comprises a first member including a surface that defines a first cavity and a second cavity. The first member is configured to engage a first vertebral surface. A second member includes a surface that defines a first cavity and a second cavity. The second member is configured to engage a second vertebral surface. The members are spaced and the first cavities are disposed in substantial alignment such that at least one first rod is disposed in the first cavities and the second cavities are disposed in substantial alignment such that a plurality of second rods are disposed in the second cavities and spaced via at least one spacer disposed between the second rods within at least one of the second cavities. In some embodiments, systems and methods are disclosed.

In one embodiment, in accordance with the principles of the present disclosure, a method for treating a spine disorder is provided. The method comprises the steps of: providing a first member including a surface that defines a first cavity and a second cavity; delivering the first member about vertebral tissue along a substantially posterior approach and adjacent a first vertebral surface; providing a second member including a surface that defines a first cavity and a second cavity; delivering the second member about the vertebral tissue along a substantially posterior approach and adjacent a second vertebral surface such that the first cavities are disposed in substantial alignment and the second cavities are disposed in substantial alignment; spacing the members; disposing at least one first rod in the first cavities; and disposing a plurality of spaced second rods within the second cavities.

BRIEF DESCRIPTION OF THE DRAWINGS

The present disclosure will become more readily apparent from the specific description accompanied by the following drawings, in which:

FIG. **1** is a perspective view of components of one embodiment of a spinal implant system in accordance with the principles of the present disclosure;

FIG. **2** is a perspective view of components of one embodiment of a spinal implant system in accordance with the principles of the present disclosure disposed with a spine;

FIG. **3** is a perspective view of components of the system and the spine shown in FIG. **2**;

FIG. **4** is a perspective view of components of the system and the spine shown in FIG. **2**;

FIG. **5** is a perspective view of components of the system and the spine shown in FIG. **2**;

FIG. **6** is a perspective view of components of the system and the spine shown in FIG. **2**;

FIG. **7** is a perspective view of components of the system and the spine shown in FIG. **2**;

FIG. **8** is a perspective view of components of the system and the spine shown in FIG. **2**;

FIG. **9** is a perspective view of components of the system and the spine shown in FIG. **2**;

FIG. **10** is a perspective view of components of the system and the spine shown in FIG. **2**;

FIG. **11** is a perspective view of components of the system and the spine shown in FIG. **2**;

FIG. **12** is a perspective view of components of the system and the spine shown in FIG. **2**;

FIG. **13** is a perspective view of components of the system and the spine shown in FIG. **2**;

FIG. **14** is a perspective view of components of one embodiment of a spinal implant system in accordance with the principles of the present disclosure;

FIG. **15** is a lateral view of a component of the system shown in FIG. **14**;

FIG. **16** is a side view of the components shown in FIG. **14**;

FIG. **17** is an enlarged breakaway view, in part cross section, of components of the system shown in FIG. **14**;

FIG. **18** is a perspective view of components of one embodiment of a spinal implant system in accordance with the principles of the present disclosure;

FIG. **19** is a perspective view of components of one embodiment of a spinal implant system in accordance with the principles of the present disclosure;

FIG. **20** is a perspective view of components of one embodiment of a spinal implant system in accordance with the principles of the present disclosure; and

FIG. **21** is a perspective view of components of the system shown in FIG. **20**.

DETAILED DESCRIPTION

The exemplary embodiments of the surgical system and related methods of use disclosed are discussed in terms of medical devices for the treatment of musculoskeletal disorders and more particularly, in terms of a spinal implant system that includes a spinal construct configured for disposal between spaced vertebrae and a method for treating a spine.

In one embodiment, the surgical system includes a posterior corpectomy implant that can be constructed in vivo. In one embodiment, the corpectomy implant includes a first implant, such as, for example, a first horseshoe-shaped endplate and a second implant, such as, for example, a second horseshoe-shaped endplate. In one embodiment, the implant is employed with a method such that the horseshoe-shaped endplates can be maneuvered around exiting nerve roots, under a spinal cord and positioned adjacent a first vertebral body and a second vertebral body. The endplates can be positioned adjacent the first and second vertebral bodies. In one embodiment, the endplates are distracted and rods are placed between the endplates. In some embodiments, the surgical system is low cost, easy to use and preserves peripheral nerves of a spine. In one embodiment, the system includes a spacer nut for spacing two support rods of a spinal construct. In one embodiment, the implant system includes the spacer nut, three support rods and a rack spreader instrument to restore a space between removed vertebral bodies.

In one embodiment, a delivery instrument is engaged to two members, such as, for example, horseshoe-shaped endplates. In one embodiment, a rack spreader is docked to handles of the delivery instrument and locked in place. The rack spreader can be actuated to restore space between first and second vertebral bodies. In one embodiment, a rod is maneuvered under an exiting nerve root and into a saddle at an anterior part of each horseshoe-shaped endplate. In some embodiments, spacers, such as, for example, long screws are used to lock a first rod into position and provide a saddle for a second rod. In one embodiment, the second rod is positioned adjacent long screws and locked in place using a coupling member, such as, for example, a set screw. In some embodiments, the rack spreader and delivery instruments are removed from the endplates. In one embodiment, a third rod is maneuvered into position and set screws secure the third rod in place.

In one embodiment, a corpectomy implant includes 4×4.75 millimeter (mm) horse-shoe shaped endplates that provide for a larger graft pocket area and higher strength. In one embodiment, each endplate has rod recesses for greater torsional strength. In one embodiment, an outer surface of the endplates includes at least one of cross-hatch texturing, engagement-enhancing features, such as, for example, spikes, and a porous titanium coating. In some embodiments, the spikes have a length of from about 0.5 mm to about 3 mm, and preferably a length of about 1.5 mm. In one embodiment, the thickness of each endplate is about 7.25 mm. In one embodiment, the thickness of the spinal implant system measured from an outer spiked surface of the first endplate to an outer spiked surface of the second endplate is about 21 mm.

In one embodiment, the system includes angled inserters having splayed handles to allow the endplates to be closer together during insertion. In some embodiments, an angle or bend in the inserter allows for easier manipulation around the spinal cord and associated anatomy. In one embodiment, the splayed handles have a 20 degree angle relative to one another. In one embodiment, a rack is used to dock onto the splayed handles of the inserters and allows for linear distraction of the endplates. In some embodiments, the size of the components of the surgical system can be adjusted according to the number of vertebral levels to be stabilized. In one embodiment, an instrument is used to manipulate the endplates into position, hold the endplates in alignment with the vertebral bodies, size the rods and/or allow for rod placement. In one embodiment, a delivery instrument, such as, for example, manipulators, are secured to the rack at a fixed angle such that the endplates are in substantial alignment. In one embodiment, an attachment point between the manipulator and the rack may be adjustable such that the manipulator can be rotated or translated relative to the rack. In one embodiment, the manipulator is secured to each endplate via a tongue-in-groove connection.

In one embodiment, one or all of the components of the surgical system are disposable, peel-pack, pre-packed sterile devices used with an implant. One or all of the components of the surgical system may be reusable. The surgical system may be configured as a kit with multiple sized and configured components.

In some embodiments, the present disclosure may be employed to treat spinal disorders such as, for example, degenerative disc disease, disc herniation, osteoporosis, spondylolisthesis, stenosis, scoliosis and other curvature abnormalities, kyphosis, tumor, infection, such as, for example, tuberculosis, and fractures. In some embodiments, the present disclosure may be employed with other osteal and bone related applications, including those associated with diagnostics and therapeutics. In some embodiments, the disclosed surgical system and methods may be alternatively employed in a surgical treatment with a patient in a prone or supine position, and/or employ various surgical approaches to the spine, including anterior, posterior, posterior mid-line, direct lateral, postero-lateral, and/or antero-lateral approaches, and in other body regions. The present disclosure may also be alternatively employed with procedures for treating the lumbar, cervical, thoracic, sacral and pelvic regions of a spinal column. The system and methods of the present disclosure may also be used on animals, bone models and other non-living substrates, such as, for example, in training, testing and demonstration.

The present disclosure may be understood more readily by reference to the following detailed description of the embodiments taken in connection with the accompanying drawing figures, which form a part of this disclosure. It is to be understood that this application is not limited to the specific devices, methods, conditions or parameters described and/or shown herein, and that the terminology used herein is for the purpose of describing particular embodiments by way of example only and is not intended to be limiting. Also, as used in the specification and including the appended claims, the singular forms "a," "an," and "the" include the plural, and reference to a particular numerical value includes at least that particular value, unless the context clearly dictates otherwise. Ranges may be expressed herein as from "about" or "approximately" one particular value and/or to "about" or "approximately" another particular value. When such a range is expressed, another embodiment includes from the one particular value and/or to the other particular value. Similarly, when values are expressed as approximations, by use of the antecedent "about," it will be understood that the particular value forms another embodiment. It is also understood that all spatial references, such as, for example, horizontal, vertical, top, upper, lower, bottom, left and right, are for illustrative purposes only and can be varied within the scope of the disclosure. For example, the references "upper" and "lower" are relative and used only in the context to the other, and are not necessarily "superior" and "inferior".

Further, as used in the specification and including the appended claims, "treating" or "treatment" of a disease or condition refers to performing a procedure that may include administering one or more drugs to a patient (human, normal or otherwise or other mammal), employing implantable devices, and/or employing instruments that treat the disease, such as, for example, microdiscectomy instruments used to remove portions bulging or herniated discs and/or bone spurs, in an effort to alleviate signs or symptoms of the disease or condition. Alleviation can occur prior to signs or symptoms of the disease or condition appearing, as well as after their appearance. Thus, treating or treatment includes preventing or prevention of disease or undesirable condition (e.g., preventing the disease from occurring in a patient, who may be predisposed to the disease but has not yet been diagnosed as having it). In addition, treating or treatment does not require complete alleviation of signs or symptoms, does not require a cure, and specifically includes procedures that have only a marginal effect on the patient. Treatment can include inhibiting the disease, e.g., arresting its development, or relieving the disease, e.g., causing regression of the disease. For example, treatment can include reducing acute or chronic inflammation; alleviating pain and mitigating and inducing re-growth of new ligament, bone and other tissues; as an adjunct in surgery; and/or any repair procedure. Also, as used in the specification and including the appended claims, the term “tissue” includes soft tissue, ligaments, tendons, cartilage and/or bone unless specifically referred to otherwise.

The following discussion includes a description of a surgical system and related methods of employing the surgical system in accordance with the principles of the present disclosure. Alternate embodiments are also disclosed. Reference is made in detail to the exemplary embodiments of the present disclosure, which are illustrated in the accompanying figures. Turning to FIGS. **1-13**, there is illustrated components of a surgical system, such as, for example, a spinal implant system **10** in accordance with the principles of the present disclosure.

The components of spinal implant system **10** can be fabricated from biologically acceptable materials suitable for medical applications, including metals, synthetic polymers, ceramics and bone material and/or their composites, depending on the particular application and/or preference of a medical practitioner. For example, the components of spinal implant system **10**, individually or collectively, can be fabricated from materials such as stainless steel alloys, commercially pure titanium, titanium alloys, Grade 5 titanium, superelastic titanium alloys, cobalt-chrome alloys, stainless steel alloys, superelastic metallic alloys (e.g., Nitinol, super elasto-plastic metals, such as GUM METAL® manufactured by Toyota Material Incorporated of Japan), ceramics and composites thereof such as calcium phosphate (e.g., SKELITE™ manufactured by Biologix Inc.), thermoplastics such as polyaryletherketone (PAEK) including polyetheretherketone (PEEK), polyetherketoneketone (PEKK) and polyetherketone (PEK), carbon-PEEK composites, PEEK-$BaSO_4$ polymeric rubbers, polyethylene terephthalate (PET), fabric, silicone, polyurethane, silicone-polyurethane copolymers, polymeric rubbers, polyolefin rubbers, hydrogels, semi-rigid and rigid materials, elastomers, rubbers, thermoplastic elastomers, thermoset elastomers, elastomeric composites, rigid polymers including polyphenylene, polyamide, polyimide, polyetherimide, polyethylene, epoxy, bone material including autograft, allograft, xenograft or transgenic cortical and/or corticocancellous bone, and tissue growth or differentiation factors, partially resorbable materials, such as, for example, composites of metals and calcium-based ceramics, composites of PEEK and calcium based ceramics, composites of PEEK with resorbable polymers, totally resorbable materials, such as, for example, calcium based ceramics such as calcium phosphate, tri-calcium phosphate (TCP), hydroxyapatite (HA)-TCP, calcium sulfate, or other resorbable polymers such as polyaetide, polyglycolide, polytyrosine carbonate, polycaroplaetohe and their combinations. Various components of spinal implant system **10** may have material composites, including the above materials, to achieve various desired characteristics such as strength, rigidity, elasticity, compliance, biomechanical performance, durability and radiolucency or imaging preference. The components of spinal implant system **10**, individually or collectively, may also be fabricated from a heterogeneous material such as a combination of two or more of the above-described materials. The components of spinal implant system **10** may be monolithically formed, integrally connected or include fastening elements and/or instruments, as described herein.

Spinal implant system **10** is employed, for example, with a minimally invasive procedure, including percutaneous techniques, mini-open and open surgical techniques to deliver and introduce instrumentation and/or an implant, such as, for example, a corpectomy implant, at a surgical site within a body of a patient, for example, a section of a spine. In some embodiments, system **10** may be employed with surgical procedures, such as, for example, corpectomy and discectomy, which include fusion and/or fixation treatments that employ implants, in accordance with the principles of the present disclosure, to restore the mechanical support function of vertebrae.

System **10** includes a spinal construct **20** having a plurality of longitudinal elements, such as, for example, rods **22**, **24** and **26**. Each of rods **22**, **24**, **26** has a cylindrical cross section configuration. In some embodiments, system **10** may include one or a plurality of rods, which may be relatively disposed in a side by side, irregular, uniform, non-uniform, offset and/or staggered orientation or arrangement. In some embodiments, rods **22**, **24**, **26** can have a uniform thickness/diameter. In some embodiments, rods **22**, **24**, **26** may have various surface configurations, such as, for example, rough, threaded for connection with surgical instruments, arcuate, undulating, dimpled, polished and/or textured. In some embodiments, the thickness defined by rods **22**, **24**, **26** may be uniformly increasing or decreasing, or have alternate diameter dimensions along its length. In some embodiments, rods **22**, **24**, **26** may have various cross section configurations, such as, for example, oval, oblong, triangular, rectangular, square, polygonal, irregular, uniform, non-uniform, variable and/or tapered. In some embodiments, rods **22**, **24**, **26** may have various lengths.

In some embodiments, the longitudinal element may have a flexible configuration and fabricated from materials, such as, for example, polyester, polyethylene, fabric, silicone, polyurethane, silicone-polyurethane copolymers, polymeric rubbers, polyolefin rubbers, elastomers, rubbers, thermoplastic elastomers, thermoset elastomers and elastomeric composites. In one embodiment, the flexibility of the longitudinal element includes movement in a lateral or side to side direction and prevents expanding and/or extension in an axial direction. In some embodiments, all or only a portion of the longitudinal element may have a semi-rigid, rigid or elastic configuration, and/or have elastic properties, such as the elastic properties corresponding to the material examples described above. In some embodiments, the longitudinal element may be compressible in an axial direction.

Spinal construct **20** includes a member, such as, for example, an endplate **28** having a U-shaped configuration, such as, for example, a parabolic configuration. Endplate **28** includes a surface **30** and a surface **32** configured to engage a vertebral surface E1 of a vertebral body V1. Surface **32** is substantially planar. In some embodiments, all or only a portion of surface **32** may be arcuate, concave, convex, undulating and/or angled. In some embodiments, surface **32** can have cross-hatch texturing, spikes, barbs, raised elements, a porous titanium coating, and/or be rough, textured, porous, semi-porous, dimpled and/or polished such that it facilitates engagement with tissue. In some embodiments, the vertebral tissue may include intervertebral tissue, endplate surfaces and/or cortical bone.

Endplate **28** includes a surface, such as, for example, an inner surface **34** that defines a cavity **36** and a cavity **38**. Cavities **36**, **38** are disposed adjacent surface **30**. In some embodiments, cavities **36**, **38** are disposed between surfaces **30**, **32**. Cavity **36** defines a U-shaped passageway **40** configured for disposal of single first rod **22**. Passageway **40** is configured for mating engagement with a distal end of a delivery instrument, as described herein. Cavity **36** includes a thread form configured to engage a thread form of a coupling member, such as, for example, a set screw **42** to fix rod **22** within cavity **36**. In some embodiments, cavity **36** may be fixed with set screw **42** in alternate fixation configurations, such as, for example, friction fit, pressure fit, locking protrusion/recess, locking keyway and/or adhesive.

Cavity **38** extends between an end **44** and an end **46** defining a linear passageway **48** therebetween. Passageway **48** includes an internal thread form configured for threaded engagement with a spacer **54**, as described herein. A plurality of spaced rods, such as, for example, rod **24** and rod **26** are disposed in ends **44**, **46** of cavity **38**, respectively. End **44** defines a U-shaped passageway **50** configured for disposal of rod **24**. End **46** is configured for disposal of a set screw **52**, as described herein.

Spinal construct **20** includes a plurality of spacers including spacer **54**. Spacer **54** includes a cylindrical element including an outer surface **56** configured for fixed engagement with inner surface **34** of endplate **28**. Spacer **54** is disposable with linear passageway **48** between rods **24**, **26** such that spacer **54** is fixed relative to inner surface **34** to fix the rods relative to endplate **28**. Spacer **54** has a cylindrical cross section configuration and outer surface **56** has an external thread form threadably engageable with passageway **48**. In some embodiments, the external thread form may include a single thread turn or a plurality of discrete threads. Spacer **54** has a length that occupies a substantial portion of passageway **48**. In some embodiments, spacer **54** occupies a majority of passageway **48**. In one embodiment, spacer **54** is configured as a set screw. In some embodiments, spacer **54** is engageable with passageway **48** by alternate fixation configurations, such as, for example, friction fit, pressure fit, expandable, locking protrusion/recess, locking keyway and/or adhesive.

Spacer **54** extends between an end **58** and an end **60**. End **58** is engageable with rod **24** and end **60** is engageable with rod **26**. End **60** has a concave outer surface such that rod **26** is disposable in flush engagement with spacer **54**. In some embodiments, end **60** has various outer surface configurations to enhance engagement of rod **26** with spacer **54**, such as, for example, end **60** may include a deformable material, such as, for example, silicone or silicone rubber. In some embodiments, all or only a portion of end **60** of spacer **54** may be variously configured and dimensioned, such as, for example, planar, polygonal, irregular, uniform, non-uniform, staggered, tapered, consistent or variable. A coupling member, such as, for example, set screw **52**, shorter in length than spacer **54**, is disposed to engage rod **26** within cavity **38**. Set screw **52** is matingly engageable with end **46** of cavity **38** such that rod **26** is secured between end **60** of spacer **54** and set screw **52**.

Spinal construct **20** includes a member, such as, for example, an endplate **62**, similar to endplate **28**. Endplate **62** has a U-shaped configuration, such as, for example, a parabolic configuration. Endplate **62** includes a surface **64** and a surface **66** configured to engage a vertebral surface E2 of vertebra V2. Surfaces **30**, **64** of endplates **28**, **62** are oriented to face one another. Rods **22**, **24**, **26** are disposed between surfaces **30**, **64** of endplates **28**, **62** such that endplates **28**, **62** are spaced to create and maintain a space S between vertebral surfaces E1, E2.

Endplate **62** includes a surface, such as, for example, an inner surface **68** that defines a cavity **70** and a cavity **72**, similar to cavities **36**, **38** described above. Cavities **70**, **72** are disposed adjacent surface **64**. Cavity **70** defines a U-shaped passageway **74** configured for disposal of rod **22**. Passageway **74** is configured for detachable engagement with a distal end of a delivery instrument, as described herein. Cavity **70** includes a thread form configured to engage a thread form of a coupling member, such as, for example, a set screw **76** to fix rod **22** within cavity **70**. Cavities **36**, **70** of each endplate **28**, **62** are disposed in substantial alignment such that rod **22** is disposed in cavities **36**, **70**.

Cavity **72** extends between an end **78** and an end **80** defining a linear passageway **82** therebetween, similar to passageway **48** described above. Rods **24**, **26** are disposed with ends **78**, **80** of cavity **72**, respectively. End **78** defines a U-shaped passageway **84** (FIG. **13**) configured for disposal of rod **26**. End **80** is configured for disposal of a set screw **86**, as described herein. Cavities **38**, **72** of endplates **28**, **62** are disposed in substantial alignment such that opposite ends of rods **24**, **26** are disposed in cavities **38**, **72** of endplates **28**, **62**, respectively.

A spacer (not shown), similar to spacer **54** described above, is disposable with passageway **82** between rods **24**, **26** such that the spacer is fixed relative to surface **68** to fix rods **24**, **26** relative to member **62**. The spacer extends between a first end and a second end. The first end is engageable with rod **24** and the second end is engageable with rod **26**. A coupling member, such as, for example, set screw **86**, similar to set screws **42**, **52** and **76** described above, is disposed to engage rod **26** within cavity **72**. Set screw **86** is matingly engageable with end **80** of cavity **72** such that rod **26** is secured between the spacer and set screw **86**.

Rods **22**, **24**, **26** are oriented with endplates **28**, **62** to define a graft cavity **88** therebetween. Graft cavity **88** is configured to receive an agent, which may include bone graft (not shown) and/or other materials, as described herein, for employment in a fixation or fusion treatment used, for example, in connection with a corpectomy. In one embodiment, the agent may include therapeutic polynucleotides or polypeptides and bone growth promoting material, which can be packed or otherwise disposed on or about the surfaces of the components of system **10**, including endplates **28**, **62**. The agent may also include biocompatible materials, such as, for example, biocompatible metals and/or rigid polymers, such as, titanium elements, metal powders of titanium or titanium compositions, sterile bone materials, such as allograft or xenograft materials, synthetic bone materials such as coral and calcium compositions, such as hydroxyapatite, calcium phosphate and calcium sulfite, biologically active agents, for example, biologically active agents coated onto the exterior of implant **20** and/or applied thereto for gradual release such as by blending in a bioresorbable polymer that releases the biologically active agent or agents in an appropriate time dependent fashion as the polymer degrades within the patient. Suitable biologically active agents include, for example, bone morphogenic protein (BMP) and cytokines.

System **10** includes a delivery instrument **90** configured for mating engagement with each of cavities **36**, **70**. Delivery instrument **90** includes a pair of endplate manipulators **92**, **94**. Manipulators **92**, **94** each include a handle **96** and an arm **98** extending from handle **96**. Arm **98** includes a hook member **100** configured for disposal about an outer surface **102** of cavity **36**. Arm **98** further includes a longitudinal element, such as, for example, a lock rod **104**. Lock rod **104** is positionable between a first orientation such that lock rod **104** is disposed within arm **98** and a second orientation such that lock rod **104** protrudes from arm **98**. In the second orientation, lock rod **104** is disposable in cavity **36** such that each manipulator **92**, **94** captures endplates **28**, **62** between lock rod **104** and hook member **100**.

System **10** includes a distractor, such as, for example, a rack spreader **106** engageable with delivery instrument **90** and defining a longitudinal axis A1. Rack spreader **106** includes a gear rack **108** having a plurality of teeth **110** that are disposed therealong. Manipulator **92** is engageable with an end **109** of gear rack **108** via a fastening member **112**. Fastening member **112** includes a C-clip. In some embodiments, manipulator **92** is fastened to gear rack **108** by various fastening engagements, such as, for example, frictional engagement, threaded engagement, mutual grooves, screws and/or nails. Rack spreader **106** includes a sleeve **114** disposed about gear rack **108**. Sleeve **114** is engageable with gear rack **108** between a locked configuration and an unlocked configuration. In the locked configuration, sleeve **114** is in fixed engagement with gear rack **108**. In the unlocked configuration, sleeve **114** is translatable relative to gear rack **108** along axis A1. Manipulator **94** is engageable with sleeve **114** via fastening member **112** such that as sleeve **114** translates relative to gear rack **108** along axis A1, manipulator **94** disposed with endplate **62** translates parallel to axis A1 to space vertebral surfaces E1, E2.

In operation, delivery instrument **90** is matingly engaged to cavities **36**, **70** of endplates **28**, **62**. Lock rod **104** of each manipulator **92**, **94** is disposed in the second orientation to lock endplates **28**, **62** between lock rod **104** and hook member **100**. Handle **96** is gripped to deliver endplate **28** about vertebral tissue, such as, for example, at least one exiting nerve root NR and a spinal cord SC along a substantially posterior approach and to position endplate **28** adjacent vertebral surface E1 of vertebra V1, as shown in FIGS. **2** and **3**. Endplate **62** is delivered about the at least one exiting nerve root NR and the spinal cord SC along a substantially posterior approach to position endplate **62** adjacent vertebral surface E1 of vertebra V2 such that cavities **36**, **70** are disposed in substantial alignment and cavities **38**, **72** are disposed in substantial alignment, as shown in FIGS. **4** and **5**.

Rack spreader **106** is engaged to delivery instrument **90** such that endplates **28**, **62** are disposed in substantial alignment, as shown in FIG. **6**. Rack spreader **106** is engaged to each manipulator **92**, **94** of delivery instrument **90** and sleeve **114** is axially translated relative to gear rack **108** along axis A1. Endplates **28**, **62** are spaced to apply a distracting force on vertebral surfaces E1, E1 to create space S, as shown in FIG. **7**. Sleeve **114** is locked to gear rack **108** to fix space S between endplates **28**, **62**.

The orientation of each endplate **28**, **62** is locked in place and rod **24** is manipulated about nerve root NR to dispose rod **24** in cavities **38**, **72** of each endplate **28**, **62**, as shown in FIG. **8**. Opposite ends of rod **24** are disposed in passageways **50** of cavities **38**, **72** of each endplate **28**, **62**, as shown in FIG. **9**. Spacer **54** is axially translated through each of cavities **38**, **72** into engagement with rod **24** such that rod **24** is fixed relative to endplates **28**, **62**, as shown in FIG. **10**. Rod **26** is delivered about nerve root NR to position rod **26** within cavities **38**, **72** adjacent ends **60** of spacers **54** of each endplate **28**, **62**, as shown in FIG. **10**. Set screws **52**, **86** are inserted within ends **46**, **80** of cavities **38**, **72** into engagement with opposite ends of rod **26** such that rod **26** is fixed between spacer **54** and set screws **52**, **86**, as shown in FIG. **11**.

Lock rods **104** are withdrawn from cavities **36**, **70** and manipulators **92**, **94** are rotated, in the direction shown by arrow A in FIG. **12** to disengage hook members **100** from endplates **28**, **62** and expose cavities **36**, **70**. Rod **22** is delivered about nerve root NR to position rod **22** in cavities **36**, **70**, as shown in FIG. **13**. Set screws **42**, **76** are inserted within cavities **36**, **70** into engagement with opposite ends of rod **22** to fix rod **22** in cavities **36**, **70** of each endplate **28**, **62**.

In one embodiment, endplates **28**, **62** are spaced between vertebrae V such that endplate **28** engages vertebral surface E1 and endplate **62** engages vertebral surface E2 to restore vertebral spacing and provide distraction and/or restore mechanical support function. In one embodiment, spinal construct **20** is expanded, as discussed herein, progressively and/or gradually to provide an implant configured to adapt to the growth of a patient including the vertebrae. In some embodiments, the height of spinal construct **20** may also be decreased over a period of time and/or several procedures to adapt to various conditions of a patient.

In some embodiments, spinal construct **20** provides a footprint that improves stability and decreases the risk of subsidence into tissue. In some embodiments, spinal construct **20** provides height restoration between vertebral bodies, decompression, restoration of sagittal and/or coronal balance and/or resistance of subsidence into vertebral endplates.

Referring to FIGS. **2**-**13**, in assembly, operation and use, system **10** including spinal construct **20**, similar to that described with regard to FIG. **1**, is employed with a surgical procedure, such as, for example, a lumbar corpectomy for treatment of a spine of a patient including vertebrae V. System **10** may also be employed with other surgical procedures, such as, for example, discectomy, laminectomy, fusion, laminotomy, laminectomy, nerve root retraction, foramenotomy, facetectomy, decompression, spinal nucleus or disc replacement and bone graft and implantable prosthetics including plates, rods, and bone engaging fasteners for securement of spinal construct **20**.

System **10** is employed with a lumbar corpectomy including surgical arthrodesis, such as, for example, fusion to immobilize a joint for treatment of an applicable condition or injury of an affected section of a spinal column and adjacent areas within a body. For example, vertebrae V includes vertebra V1 and vertebra V2. A diseased and/or damaged vertebra and intervertebral discs are disposed between the vertebrae V1 and V2. In some embodiments, spinal construct **20** is configured for insertion within a vertebral space to space apart articular joint surfaces, provide support and maximize stabilization of vertebrae V.

In use, to treat the affected section of vertebrae V, a medical practitioner obtains access to a surgical site including vertebrae V in any appropriate manner, such as through incision and retraction of tissues. In some embodiments, system **10** may be used in any existing surgical method or technique including open surgery, mini-open surgery, minimally invasive surgery and percutaneous surgical implantation, whereby vertebrae V is accessed through a mini-incision, or sleeve that provides a protected passageway to the area. Once access to the surgical site is obtained, corpectomy is performed for treating the spine disorder. The diseased and/or damaged portion of vertebrae V, and diseased and/or damaged intervertebral discs are removed to create a vertebral space S.

A preparation instrument (not shown) is employed to remove disc tissue, fluids, adjacent tissues and/or bone, and scrape and/or remove tissue from vertebral surface E1 of vertebra V1 and/or vertebral surface E2 of vertebra V2. Spinal construct **20** is provided with at least one agent, similar to those described herein, to promote new bone growth and fusion to treat the affected section of vertebrae V.

Spinal construct **20** is delivered to the surgical site adjacent vertebrae V with delivery instrument **90** including manipulators **92**, **94** via the protected passageway for the arthrodesis treatment. Manipulators **92**, **94** deliver endplates **28**, **62** into the prepared vertebral space S, between vertebra V1 and vertebra V2.

Delivery instrument **90** is matingly engaged to cavities **36**, **70** of endplates **28**, **62**. Lock rod **104** of each manipulator **92**, **94** is disposed in the second orientation to lock endplates **28**, **62** between lock rod **104** and hook member **100**. Handle **96** is gripped to deliver endplate **28** about vertebral tissue, such as, for example, at least one exiting nerve root NR and a spinal cord SC along a substantially posterior approach and to position endplate **28** adjacent vertebral surface E1 of vertebra V1, as shown in FIGS. **2** and **3**. Endplate **62** is delivered about nerve root NR and spinal cord SC along a substantially posterior approach to position endplate **62** adjacent vertebral surface E1 of vertebra V2 such that cavities **36**, **70** are disposed in substantial alignment and cavities **38**, **72** are disposed in substantial alignment, as shown in FIGS. **4** and **5**.

Rack spreader **106** is engaged to delivery instrument **90** such that endplates **28**, **62** are disposed in substantial alignment, as shown in FIG. **6**. Rack spreader **106** is engaged to each manipulator **92**, **94** of delivery instrument **90** and sleeve **114** is axially translated relative to gear rack **108** along axis A1. Endplates **28**, **62** are spaced to apply a distracting force on vertebral surfaces E1, E1 to create space S, as shown in FIG. **7**. Sleeve **114** is locked to gear rack **108** to fix space S between endplates **28**, **62**.

The orientation of each endplate **28**, **62** is locked in place and rod **24** is manipulated about nerve root NR to dispose rod **24** in cavities **38**, **72** of each endplate **28**, **62**, as shown in FIG. **8**. Opposite ends of rod **24** are disposed in passageways **50** of cavities **38**, **72** of each endplate **28**, **62**, as shown in FIG. **9**. Spacer **54** is axially translated through each of cavities **38**, **72** into engagement with rod **24** such that rod **24** is fixed relative to endplates **28**, **62**, as shown in FIG. **10**. Rod **26** is delivered about nerve root NR to position rod **26** within cavities **38**, **72** adjacent ends **60** of spacers **54** of each endplate **28**, **62**, as shown in FIG. **10**. Set screws **52**, **86** are inserted within ends **46**, **80** of cavities **38**, **72** into engagement with opposite ends of rod **26** such that rod **26** is fixed between spacer **54** and set screws **52**, **86**, as shown in FIG. **11**.

Lock rods **104** are withdrawn from cavities **36**, **70** and manipulators **92**, **94** are rotated, in the direction shown by arrow A in FIG. **12**, to disengage hook members **100** from endplates **28**, **62** and expose cavities **36**, **70**. Rod **22** is delivered about nerve root NR to position rod **22** in cavities **36**, **70**, as shown in FIG. **13**. Set screws **42**, **76** are inserted within cavities **36**, **70** into engagement with opposite ends of rod **22** to fix rod **22** in cavities **36**, **70** of each endplate **28**, **62**.

Spinal construct **20** engages and spaces apart opposing vertebral surfaces E1, E2 and is secured within vertebral space S to stabilize and immobilize portions of vertebrae V in connection with bone growth for fusion and fixation of vertebrae V1, V2. Fixation of spinal construct **20** with surfaces E1, E2 may be facilitated by the resistance provided by the joint space and/or engagement with surfaces E1, E2. Rods **22**, **24**, **26** prevent endplates **28**, **62** from axially translating relative to one another to fix spinal construct **20** in a selected expanded and/or contracted orientation, including those described herein.

In some embodiments, an agent(s), as described herein, may be applied to areas of the surgical site to promote bone growth. Components of system **10** including spinal construct **20** can be delivered or implanted as a pre-assembled device or can be assembled in situ. Components of system **10** including spinal construct **20** may be completely or partially revised, removed or replaced in situ. In some embodiments, one or all of the components of system **10** can be delivered to the surgical site via mechanical manipulation and/or a free hand technique.

In one embodiment, spinal construct **20** may include fastening elements, which may include locking structure, configured for fixation with vertebrae V1, V2 to secure joint surfaces and provide complementary stabilization and immobilization to a vertebral region. In some embodiments, locking structure may include fastening elements such as, for example, rods, plates, clips, hooks, adhesives and/or flanges. In some embodiments, system **10** can be used with screws to enhance fixation. In some embodiments, system **10** and any screws and attachments may be coated with an agent, similar to those described herein, for enhanced bony fixation to a treated area. The components of system **10** can be made of radiolucent materials such as polymers. Radiomarkers may be included for identification under x-ray, fluoroscopy, CT or other imaging techniques.

In some embodiments, the use of microsurgical and image guided technologies may be employed to access, view and repair spinal deterioration or damage, with the aid of system **10**. Upon completion of the procedure, the non-implanted components, surgical instruments and assemblies of system **10** are removed and the incision is closed.

In one embodiment, as shown in FIGS. **14-19**, system **10** includes a spinal construct **200**, similar to spinal construct **20** described above with regard to FIGS. **1-13**. Spinal construct **200** includes a plurality of longitudinal elements, such as, for example, a plurality of spinal rods **202**, **204**, **206**, **208**, similar to spinal rods **22**, **24**, **26** described above.

Spinal construct **200** includes a member, such as, for example, an endplate **228** having a U-shaped configuration, such as, for example, a parabolic configuration. In some embodiments, endplate **228** can alternatively include, for example, a V-shaped configuration, a J-shaped configuration and/or configuration to enable substantially posterior insertion around a spinal cord, provide peripheral zygapophyseal rim load bearing and/or a central cavity for graft contact with a vertebral surface. Endplate **228** includes a surface **230** and a surface **232** configured to engage a vertebral surface. Surface **232** is substantially planar and acutely angled relative to surface **230** to define a larger thickness at a lower portion **234** than an upper portion **236** of endplate **228**, as shown in FIG. **15**. In some embodiments, surface **232** may be disposed at alternate orientations, relative to surface **230**, such as, for example, parallel, transverse, perpendicular and/or other angular orientations such as acute or obtuse, co-axial and/or may be offset or staggered. In some embodiments, surface **232** can have cross-hatch texturing, spikes, barbs, raised elements, a porous titanium coating, and/or be rough, textured, porous, semi-porous, dimpled and/or polished such that it facilitates engagement with tissue to enhance fixation. In one embodiment, spikes or screws are inserted through surfaces **230**, **232** into engagement with tissue, such as, for example, vertebral tissue, to engage endplate **228** with the vertebral tissue to enhance fixation. Surfaces **230**, **232** define a non-uniform thickness therebetween that tapers from lower portion **234** to upper portion **236** of endplate **228**. In some embodiments, the thickness defined between surfaces **230**, **232** is variously configured, such as, for example, irregular, uniform, offset, staggered, undulating, arcuate, and/or variable.

Endplate **228** includes an inner sidewall **238** having a V-shaped cross section configuration and an outer sidewall **240** having a parabolic shaped cross section configuration, as shown in FIG. **16**. In some embodiments, inner and outer sidewalls **238**, **240** have alternate cross section configurations, such as, for example, U-shaped, parabolic-shaped, oval, oblong, triangular, square, polygonal, irregular, uniform, non-uniform, offset, staggered, undulating, arcuate, variable and/or tapered. Lower portion **234** has a thickness t1 defined between sidewalls **238**, **240** that is less than a thickness t2 defined between sidewalls **238**, **240** at upper portion **236** such that an enlarged graft area GA is provided.

Endplate **228** includes a surface, such as, for example, an inner surface **242** that defines a cavity **244** and a cavity **246**. Cavities **244**, **246** are disposed between surfaces **230**, **232**. Cavity **244** extends between an end **248** and an end **250** defining a linear passageway **252** therebetween. Passageway **252** includes an internal thread form configured for threaded engagement with a spacer **254**, similar to spacer **54** described above, and a distal end of a delivery instrument, to be described below. In one embodiment, inner surface **242** can be alternatively partially threaded, non-threaded and/or passageway **252** has an arcuate configuration configured to align with the curvature of endplate **228** such that a spacer, as described herein, is smooth and/or square, oval or hexagonal, secures a spinal rod, which may also be smooth and/or square, oval or hexagonal. A plurality of spaced rods, such as, for example, rod **202** and rod **204** are disposed in the ends **248**, **250** of cavity **244**, respectively. In one embodiment, end **248** defines a first lateral recess **256** configured for disposal of rod **202** and end **250** defines a second lateral recess **258** configured for disposal of rod **204**. Recesses **256**, **258** have a circular cross section configuration corresponding to the cross section configuration of rods **202**, **204** to capture rods **202**, **204**. In some embodiments, recesses **256**, **258** have alternative cross section configurations, such as, for example, those alternatives described herein to capture variously shaped rods. In some embodiments, passageway **252** is configured for the spaced disposal of more than two rods, such as, for example, 3 to 10 rods. In some embodiments, passageway **252** is variously shaped, such as, for example, non-linear, arcuate, and/or the alternatives described herein.

Spinal construct **200** includes a spacer **254**, similar to spacer **54** described above, disposable with passageway **252** between rods **202**, **204** such that spacer **254** is fixed relative to inner surface **242** to fix rods **202**, **204** relative to endplate **228**. Spacer **254** includes a cylindrical element including an outer surface configured for fixation with inner surface **242** of endplate **228**. Spacer **254** extends between an end **260** and an end **262**. End **260** is engageable with rod **202** and end **262** is engageable with rod **204** such that spacer **254** is disposed between rods **202**, **204** within passageway **252**. Rod **202** is fixed to endplate **228** via engagement between surface **242** and end **260** of spacer **254**. End **262** has a concave outer surface such that rod **204** is disposable in flush engagement with spacer **254**. Spacer **254** has a length that occupies a substantial portion of passageway **252**. In some embodiments, spacer **254** occupies a majority of passageway **252**. A coupling member, such as, for example, a set screw **264**, shorter in length than spacer **254**, is disposed to engage rod **204** within cavity **244**. Set screw **264** is matingly engageable with end **250** of cavity **244** such that rod **204** is secured between end **262** of spacer **254** and set screw **264**.

Cavity **246**, similar to cavity **244** described above, extends between an end **266** and an end **268** defining a linear passageway **270** therebetween, similar to linear passageway **252** described above. A plurality of spaced rods, such as, for example, rod **206** and rod **208** are disposed in ends **266**, **268** of cavity **246**, respectively. An end **274** of a spacer **272**, similar to spacer **254** described above, is engageable with rod **206**. An end **276** of spacer **272** is engageable with rod **208** such that spacer **272** is disposed between rods **206**, **208** within passageway **270**. Rod **206** is fixed to endplate **228** via engagement between surface **242** and end **274** of spacer **272**. End **276** of spacer **272** has a concave outer surface such that rod **208** is disposable in flush engagement with spacer **272**. A coupling member, such as, for example, a set screw **278** is disposed to engage rod **208** within cavity **246**. Set screw **278** is matingly engageable with end **268** of cavity **246** such that rod **208** is secured between end **276** of spacer **272** and set screw **278**.

Spinal construct **200** includes a member, such as, for example, an endplate **280**, similar to endplate **228** described above. Endplate **280** includes a surface **282** and a surface **284** configured to engage a second vertebral surface. Surfaces **230**, **282** of endplates **228**, **280** are oriented to face one another. Rods **202**, **204**, **206**, **208** are disposed between surfaces **230**, **282** of endplates **228**, **280** such that endplates **228**, **280** are spaced to create and maintain a space S between the first and second vertebral surfaces. Cavities **244**, **245** of endplates **228**, **280** are disposed in substantial alignment such that spaced rods **202**, **204** are disposed in cavities **244** of each endplate **228**, **280**. Cavities **246**, **247** of endplates **228**, **280** are disposed in substantial alignment such that spaced rods **206**, **208** are disposed in cavities **246**, **247**. Rods **202**, **204**, **206**, **208** are oriented with endplates **228**, **280** to define a graft cavity **286** therebetween. Graft cavity **286** is configured to receive an agent, similar to the agent described above.

Spinal implant system **10** includes a delivery instrument, such as, for example, angled inserters **288** configured for mating engagement with each of cavities **244**, **245** and/or cavities **246**, **247** of endplates **228**, **280** via a tongue in groove connection **290**. Inserters **288** include a pair of splayed handles **292**. Splayed handles **292** are offset from one another at an angle α. In some embodiments, angle α may include an angle in a range of approximately 5 to 50 degrees. In some embodiments, splayed handles **292** are variously angled, such as, for example, acute or obtuse, co-axial and/or may be offset or staggered. The angle between handles **292** allows endplates **228**, **280** to be initially disposed immediately adjacent one another between vertebrae. Inserters **288** include arms **294** extending from splayed handles **292** and including a proximal portion **296** and a distal portion **298**. Proximal portion **296** is connected to handles **292**. Distal portion **298** is matingly engageable with endplates **228**, **280** via tongue in groove connection **290**. Distal portion **298** is obtusely angled with respect to proximal portion **296** and handles **292** at an angle β. In some embodiments, angle β may include an angle in a range of approximately 70 to 170 degrees. The angle between distal portion **298** and handles **292** allows for easier manipulation of inserters **288** around the spinal cord and associated anatomy. Tongue in groove connection **290** includes a threaded lock **300** and a pair of tabs **302**. Threaded lock **300** is configured for threaded engagement with at least one of cavities **244**, **245**, **246**, **247** of each endplate **228**, **280**. The pair of tabs **302** are disposable with detents in inner and outer sidewalls **238**, **240** of endplates **228**, **280** such that distal portion **298** is matingly engageable with each of cavities **244**, **245** and/or cavities **246**, **247** of endplates **228**, **280**. In some embodiments, distal portion **298** is detachably fastened to endplates **228**, **280** by various fastening engagements, such as, for example, frictional engagement, threaded engagement, mutual grooves, screws and/or nails.

System **10** includes a distractor, such as, for example, a rack spreader **304**, similar to rack spreader **106** described above. Rack spreader **304** is engageable with proximal portion **296** or distal portion **298** of inserters **288** such that inserters **288** are angled relative to rack spreader **304**. Rack spreader **304** includes a coupling member **306** and a coupling member **308**. Coupling members **306**, **308** each include an inner surface defining cavities **310** and **312** configured for disposal of inserters **288**. Coupling members **306**, **308** further include latch locks **314**, **316** for capturing inserters **288** in cavities **310**, **312**. Coupling members **306**, **308** are pivotally connected to rack spreader **304** at pivot points **318**, **320** such that an angle between rack spreader **304** and inserters **288** is adjustable. Rack spreader **304** axially translates inserters **288** causing the distraction and/or compression of vertebral surfaces via a distracting and/or compressing force applied by endplates **228**, **280**.

In one embodiment, as shown in FIGS. **20** and **21**, system **10** includes a spinal construct **400**, similar to spinal construct **20** described herein with regard to FIGS. **1-13**. Spinal construct **400** is used in spinal surgery, such as, for example, an anterior vertebrectomy such that a patient is positioned on a side and access to the spine is between the lower ribs. Spinal construct **400** includes members, such as, for example, endplates **428**, **430**, similar to endplates **28**, **62** described herein with regard to FIGS. **1-13**. Endplate **428** includes a surface **432** and a surface **434** configured to engage a vertebral surface of a vertebral body. Endplate **430** includes a surface **436** and a surface **438** configured to engage a vertebral surface of a vertebral body. Endplates **428**, **430** each include upper, outer arcuate surfaces **440**, **442** and lower, outer arcuate surfaces **444**, **446**. Endplates **428**, **430** have a U-shaped configuration, such as, for example, a parabolic configuration defined by the upper and lower surfaces **440**, **442**, **444**, **446**.

Endplate **428** includes a surface, such as, for example, an inner surface **448** that defines a cavity **450** and a cavity **452**, similar to cavities **36**, **38** described herein with regard to FIGS. **1-13**. Cavity **450** includes an anterior opening **454** configured for insertion of set screw **42** and a U-shaped passageway **456** configured for disposal of rod **24**. Cavity **450** is oriented relative to surface **432** such that opening **454** is disposed adjacent lower surface **444** and U-shaped passageway **456** is oriented adjacent upper surface **440**. Cavity **452** includes an anterior opening **458** configured for insertion of set screw **52** and a U-shaped passageway **460** configured for disposal of rod **22**. Cavity **452** is oriented relative to surface **432** such that opening **458** is disposed adjacent lower surface **444** and U-shaped passageway **460** is oriented adjacent upper surface **440**.

Endplate **430** includes a surface, such as, for example, an inner surface **462** that defines a cavity **464** and a cavity **466**, similar to cavities **36**, **38** described herein with regard to FIGS. **1-13**. Cavity **464** includes an anterior opening **468** configured for insertion of a set screw (not shown) and a U-shaped passageway **470** configured for disposal of rod **24**. Cavity **464** is oriented relative to surface **436** such that opening **468** is disposed adjacent lower surface **446** and U-shaped passageway **470** is oriented adjacent upper surface **442**. Cavity **466** includes an anterior opening **472** configured for insertion of a set screw (not shown) and a U-shaped passageway **474** configured for disposal of rod **22**. Cavity **466** is oriented relative to surface **436** such that opening **472** is disposed adjacent lower surface **446** and U-shaped passageway **474** is oriented adjacent upper surface **442**. In some embodiments, spinal construct **400** is manipulated for insertion into a spine along a substantially anterior approach for treatment of the spine such that openings **454**, **458** of endplate **428** and openings **468**, **472** of endplate **430** are oriented in an anterior direction relative to a body of a patient, for receiving the set screws.

It will be understood that various modifications may be made to the embodiments disclosed herein. Therefore, the above description should not be construed as limiting, but merely as exemplification of the various embodiments. Those skilled in the art will envision other modifications within the scope and spirit of the claims appended hereto.

What is claimed is:

1. A spinal construct comprising:

a first member including a first cradle that defines a first cavity and a second cradle that defines a second cavity, the first member being configured to engage a first vertebral surface, the first cavity defining a longitudinal axis that intersects the second cradle;

a second member including a surface that defines a first cavity and a second cavity, the second member being configured to engage a second vertebral surface; and

at least one spacer,

wherein the members are spaced and the first cavities are disposed in substantial alignment such that at least one first rod is disposed in the first cavities and the second cavities are disposed in substantial alignment such that a plurality of second rods are disposed in the second cavities and spaced via the at least one spacer disposed between the second rods within at least one of the second cavities.

2. A spinal construct as recited in claim **1**, wherein the spacer is fixed relative to the surface of the second member to fix the second rods relative to the second member.

3. A spinal construct as recited in claim **1**, wherein the spacer is disposed between the second rods within each of the second cavities and fixed with the surface of the second member, and further comprising a coupling member disposed to engage a second rod within each of the second cavities.

4. A spinal construct as recited in claim **1**, wherein the second member further includes a U-shaped configuration having a parabolic configuration.

5. A spinal construct as recited in claim **1**, wherein the first member has a U-shaped configuration.

6. A spinal construct as recited in claim **1**, wherein at least one of the second cavities includes a linear passageway.

7. A spinal construct as recited in claim **1**, wherein each of the first cavities is configured for disposal of only one first rod.

8. A spinal construct as recited in claim **1**, wherein:

the cradles extend outwardly from an inner surface of the first member;

the inner surface and outer surfaces of the cradles define an end portion of a graft cavity, the end portion being positioned between the outer surfaces; and

the rods are oriented with the members to define a middle portion of the graft cavity that is continuous with the end portion.

9. A spinal implant system comprising:

a delivery instrument; and

the spinal construct recited in claim **1**, wherein each of the first cavities is configured for mating engagement with the delivery instrument, the delivery instrument comprising an arm having a hook member configured for disposal about an outer surface of each of the first cavities, the arm comprising a lock rod positionable between a first orientation such that the lock rod is disposed with the arm and a second orientation such that the lock rod protrudes from the arm for disposal in one of the first cavities such that the delivery instrument captures one of the members between the lock rod and the hood member.

10. A method for treating a spine disorder, the method comprising the steps of:

providing the spinal construct recited in claim **1**;

delivering the first member about vertebral tissue along a substantially posterior approach and adjacent a first vertebral surface;

delivering the second member about the vertebral tissue along a substantially posterior approach and adjacent a second vertebral surface such that the first cavities are disposed in substantial alignment and the second cavities are disposed in substantial alignment;

spacing the members;

disposing at least one first rod in the first cavities; and

disposing a plurality of spaced second rods within the second cavities.

11. A method as recited in claim **10**, wherein the vertebral tissue includes nerve roots and spinal cord.

12. A method as recited in claim **10**, wherein the step of disposing the plurality of spaced second rods includes disposing a spacer between the second rods within each of the cavities.

13. A spinal construct as recited in claim **1**, wherein:

the at least one spacer extends between a first end and an opposite second end that includes a concave outer surface; and

the concave outer surface engages one of the second rods for disposal thereof in flush engagement with the at least one spacer disposed between the second rods.

14. A spinal construct as recited in claim **1**, wherein the second cavity of the first member has a maximum length that is greater than that of the first cavity of the first member and the second cavity of the second member has a maximum length that is greater than that of the first cavity of the second member.

15. A spinal implant system comprising:

a first endplate including a first cradle that defines a first cavity and a second cradle that defines a second cavity, the first endplate being configured to engage a first vertebral surface, the first cavity defining a longitudinal axis that intersects the second cradle;

a second endplate including a surface that defines a first cavity and a second cavity, the second endplate being configured to engage a second vertebral surface;

a plurality of first rods;

a plurality of second rods; and

a plurality of spacers,

wherein the endplates are spaced and the first cavities are disposed in substantial alignment such that the first rods are spaced via the spacers in the first cavities and the second cavities are disposed in substantial alignment such that the second rods are spaced via the spacers in the second cavities.

16. A spinal implant system as recited in claim **15**, further comprising a plurality of coupling members disposed to engage the rods in the cavities for fixation of the rods with the endplates, wherein each of the spacers include a cylindrical element including a threaded outer surface configured for fixation with threaded surfaces of the cradles.

17. A spinal implant system as recited in claim **15**, further comprising a delivery instrument configured for mating engagement with each of the first cavities.

18. A spinal implant system as recited in claim **17**, wherein the delivery instrument is matingly engageable with each of the first cavities via a tongue in groove connection.

19. A spinal implant system as recited in claim **17**, wherein the delivery instrument includes a pair of splayed handles.

20. A spinal construct comprising:

a first member including a body and first and second arms that extend from the body, the first member comprising a first cradle positioned on the first arm that defines a first cavity and a second cradle positioned on the body and the second arm that defines a second cavity, the first member being configured to engage a first vertebral surface;

a second member including a surface that defines a first cavity and a second cavity, the second member being configured to engage a second vertebral surface; and

at least one spacer,

wherein the members are spaced and the first cavities are disposed in substantial alignment such that at least one first rod is disposed in the first cavities and the second cavities are disposed in substantial alignment such that a plurality of second rods are disposed in the second cavities and spaced via the at least one spacer disposed between the second rods within at least one of the second cavities.

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